

II. ORTHOPTERA FROM AFRICA, BEING A REPORT UPON SOME SALTATORIA MAINLY FROM CAMEROON CONTAINED IN THE CARNEGIE MUSEUM.

BY LAWRENCE BRUNER.

The present article is based on two major and two or three minor collections and odd specimens of orthopteroid insects which have come into the possession of the Carnegie Museum during the past four or five years. There are, all told, three hundred and eighty-two specimens.* The species are divided among the suborders as follows: *Locustoidea*, forty-eight; *Achetoidea*, sixteen; and *Tettigonoidea*, forty-one; or approximately one hundred and five. Nine of these species appear to be new, and are thus characterized in this paper, while a few of the Achetoidea have been reserved for further study.

While the Orthoptera, as well as several other groups of insects, occurring in the general region, from which most of the material now being studied has come, have been quite extensively collected and worked over by entomologists, so far as certain isolated localities are concerned, no doubt there remain many other species, both common and rare, to be added. In fact, it is the opinion of the writer that tropical Africa as a whole is practically *terra incognita*, so far as its insect-fauna is concerned.

Family TETRIGIDÆ.

The grouse-locusts comprise a very interesting group, and are widely distributed over the surface of the earth. Of course they are most numerous represented in the warmer and more humid regions, where they abound in forests, jungles, swamps, or mountain slopes; in open

* *Note:* It is proper to observe that not all of the representatives of certain of the commoner species of African Saltatorial Orthoptera were sent to Dr. Bruner, at the time the insects were submitted to him for study. In some cases where the species was represented by scores of specimens it was thought hardly worth while to burden him with the care of all of them.—W. J. HOLLAND.

country, as prairies and even semi-deserts; or wherever there is water, or damp ground to which they are partial. In looking for these insects the collector succeeds best when he carefully examines the margins of streams, low beaches, and open localities in swamps; paths, roads, and other openings in forests and jungles; tree-trunks, moss-covered rocks, fallen leaves and other rubbish which covers the ground. In such environment they lurk, protected by their dull and imitative colors. Besides being protectively colored and having great resemblances to fragments of dead vegetation, particles of bark, earth, pebbles, and similar objects, they also show a tendency to feign death or to quietly perch so as to avoid notice. Some forms even crawl or dive beneath the surface of water and cling to submerged sticks, stones, etc., where they remain for long intervals at a time.

Under these conditions it usually happens that ordinary collectors of insects when visiting a region overlook most of the Tettrigidae. Only the specialist, or persons who are especially in quest of them, and who knows their habits and haunts, are likely to take a fair percentage of those species which the locality contains.

A complete list of these insects known from Africa at present only includes about seventy-five species. There would undoubtedly be several times that number listed, if all were known.

Fully one-half of these insects reported from Africa are recorded from the region whence the collections now being reported upon came. Notwithstanding this fact there are less than a dozen forms at hand.

Genus HIPPODES Karsch.

Hippodes KARSCH, Ent. Nachr., XVI, p. 24, pl. 17 (1890); HANCOCK, Genera Ins., Fasc. 48, pp. 17-24, fig. 7 (1908).

This genus was established for the reception of a wingless grouse-locust coming from West Africa. The present collection contains another apparently closely related, but smaller species, which is here described.

1. *Hippodes hopei* sp. nov.

Of medium size, moderately robust, without tegmina and wings, and with the apex of the pronotum reaching only one-half the distance to the tip of the ovipositor and to the middle of the hind femora.

Body somewhat depressed, the pronotum robust, somewhat tectate and arched on its anterior half, the median carina prominent through-

out, but more decidedly so in advance of its middle, the surface granulose, but not at all rugose or tuberculate; anterior margin truncate, the apex rounded and widely subtruncate; the lateral lobes provided with a sinuation immediately back of the lateral lobe, which is obliquely rounded and directed a little to the rear and outward. Tegmina and wings wanting. Head rather broad, set into the front edge of the pronotum almost to the eyes; the vertex convex, almost as wide again as one of the eyes, its front roundly advanced, its anterior margin without a transverse carina and gradually merging with the upper portion of the front; the frontal costa continuing above as a prominent carina through the middle of the vertex and extending backward halfway to the anterior edge of the pronotum, rather profoundly sulcate, the rami diverging somewhat strongly from a little above the posterior ocelli to a point drawn across the face from below the lower ocellus, and, when viewed laterally, roundly prominent between the antennæ. The latter arise just within a line drawn between the lower edge of the eyes, are slender and of moderate length. Anterior and middle femora elongate, several times as long as wide, the carinæ not at all foliate or lobate; hind femora robust; hind tibiæ with few spines, irregularly placed, the first joint of the tarsi at least one and one-half times as long as the third. Valves of the ovipositor robust and evenly and strongly serrated.

General color dark fuscous, the apical half of the pronotum and markings on the hind femora bruneo-testaceous, the tibiæ obscurely fasciate. Lower outer edge of the hind femora black. Abdomen varied with dusky and pale markings.

Length of body, ♀, 10 mm.; of pronotum, 6.5 mm.; of hind femora, 6 mm.

Habitat: Batanga, Cameroon,¹ F. H. Hope, Collector. Only the type, a female, is at hand. C. M. Acc. No. 5293.

Genus CRIOTETTIX Bolivar.

Criotettix BOLIVAR, Bol. Ann. Soc. Ent. Belg., XXXI, pp. 184, 193, 222 (1887); HANCOCK, Spol. Zeyl., II, pp. 108, 128 (1904); IB., Gen. Ins., Fasc. 48, Orth., Acrid., Tetrig., pp. 22, 27 (1906).

¹ The name of this part of Africa in the English language is Cameroon. When the Germans seized it, they Germanicized the name, calling it "Kamerun." Now that the French are administering it, they write the name "Cameroun." I propose to stick to the English spelling, which antedates all others. W. J. Holland.

2. *Criotettix nigellus* Bolivar.

Criotettix nigellus BOLIVAR, *l. c.*, XXXI, pp. 185, 223, 225 (1887); *IB.*, Mem. Soc. Españ. Hist. Nat., I, p. 213 (1905).

Four specimens of grouse-locusts contained in the collections at hand are referred to this species. Three of them were taken by A. I. Good at Lolodorf, Cameroon, and the other by F. H. Hope at Batanga, Cameroon. They were collected in November and March. C. M. Acc. Nos. 5264 and 5293.

Bolivar in his description of the species does not mention the pallid color of the apex of the abdomen, the meso- and metapleura, and the lateral spines of pronotum, as found on these specimens. Aside from this discrepancy they agree very well with his description of *nigellus*.

Genus MORPHOPUS Bolivar.

Morphopus BOLIVAR, Bol. Mém. Soc. Españ. Hist. Nat., I, p. 216 (1905); HANCOCK, Gen. Ins., Fasc. 48, Orth. Acrid. Tetrig., pp. 31, 37 (1906).

3. *Morphopus affinis* Bolivar.

Morphopus affinis BOLIVAR, Bol. Mém. Soc. Españ. Hist. Nat., I, p. 216 (1905); HANCOCK, Mém. Soc. Ent. Belg., XIV, p. 85, no. 7 (1908).

The material taken at Batanga, contains one male and two females, which were collected by F. H. Hope in February, 1914. A single female is also at hand from Lolodorf. The latter specimen was taken in November, 1910, by A. I. Good.

Genus PARATETTIX Bolivar.

Paratettix BOLIVAR, Bol. Ann. Soc. Ent. Belg., XXXI, pp. 187, 195, 270 (1887); also many authors. See Kirby, Syn. Cat. Orth., III, p. 32 (1910).

4. *Paratettix meridionalis* (Rambur)?

Tettix meridionalis RAMBUR, Faune Andal., II, p. 65 (1839). For synonymy see Kirby, *l. c.*, p. 32.

The collections made by A. I. Good at Lolodorf contain eleven specimens of a *Paratettix*, which I am inclined to refer to *meridionalis*, although somewhat outside of its recorded habitat. C. M. Acc. No. 5264. They were taken in May, 1914, and November and December, 1913. An additional specimen, but somewhat smaller, and taken by the same collector, is likewise placed here.

5. *Paratettix wilverthi* Bolivar?

Paratettix wilverthi BOLIVAR, Mém. Soc. Ent. Belg., XVI, p. 86 (1908).

There are five specimens belonging to this genus, a single female and four males, which rather closely approach Bolivar's description of *P. wilverthi*, and they are accordingly referred to it. The female and two males were collected by A. I. Good at Lolodorf, while the other males are from Batanga and were taken by F. H. Hope. Only the female agrees very closely with the characterization of the species as given by Bolivar. The others vary more or less.

Genus *ACRYDIUM* Geoffroy.

Acrydium GEOFFROY, Hist. Ins., I, p. 390 (1762); KIRBY, Syn. Cat. Orth., III, p. 35 (1910). For a more extended bibliography of the genus see Kirby, *l. c.*

This is the genus *Tettix* of Latreille and *Tettix* of Charpentier and later writers. However, according to priority, and other rules of zoölogical nomenclature, it seems to be necessary to discard these later and almost universally used names for that of Geoffroy.

According to the characters used for the separation of this genus, at least two distinct forms must be referred to it.

6. *Acrydium gratiosus* (Karsch)?

Tettix gratiosus KARSCH, Berlin. Ent. Zeitschr., XXXVIII, p. 120 (1893).

Acrydium gratiosum KIRBY, Syn. Cat. Orth., III, p. 44 (1910).

A single female coming from Lolodorf, Cameroon, thus determined. It was taken by A. I. Good on November 12, 1913. C. M. Acc. No. 5264.

7. *Acrydium wælbæchi* (Bolivar)?

Tettix wælbæchi BOLIVAR, Mém. Soc. Ent. Belg., XVI, p. 87 (1908).

Acrydium wælbæchi KIRBY, Syn. Cat. Orth., III, p. 49 (1910).

There are two males of a second species, which were also taken by Mr. Good in November, 1913, and are referred with some doubt to Bolivar's *Tettix wælbæchi*, originally described from Kinchassa in the Congo. They form part of the same accession as the preceding.

Family TRUXALIDÆ.

Africa is the habitat of a large number of genera and species of truxaline locusts. The present collection, however, does not contain many representatives of the group, since only about half a dozen

species are found in the material being studied and upon which I am reporting.

Genus *ACRIDA* Stål.

Acrida STÅL, Recens. Orth., I, pp. 88, 95 (1873); BURR, Trans. Ent. Soc. Lond., 1902, pp. 149, 155.

8. *Acrida propinqua* Burr.

Acrida propinqua BURR, Trans. Ent. Soc. Lond., 1902, pp. 157, 171.

Five specimens belonging to the genus *Acrida* are at hand: They are referred to Burr's *propinqua*. Two males and one female come from Batanga, where they were taken by F. H. Hope. One female bears the label "Lolodorf, Kamerun." It was collected by A. I. Good. A third female bears the label "Congo, Antidel." The latter specimen belongs to C. M. Acc. No. 2315.

Genus *ODONTOMELUS* Bolivar.

Odontomelus BOLIVAR, Bol. An. Soc. Españ. Hist. Nat., XIX, p. 309 (1890); KARSCH, Berlin. Ent. Zeitschr., XXXVIII, pp. 53, 61 (1893); BURR, Trans. Ent. Soc. Lond., 1902, p. 154.

9. *Odontomelus bifrensis* Bolivar.

Odontomelus bifrensis BOLIVAR, Mem. Soc. Españ. Hist. Nat., I, p. 219 (1905).

Three males coming from Batanga are placed here. They were taken by F. H. Hope in April, 1914. C. M. Acc. No. 5293.

Genus *RODUNIA* Bolivar.

Rodunia BOLIVAR, Bol. Mém. Soc. Ent. Belg., XVI, p. 99, note (1908); KIRBY, Syn. Cat. Orth., III, p. 139 (1910).

The representatives of this African genus bear a general resemblance to various species of *Orphulella* and allied American forms. Like them, they also appear to be genuine "grasshoppers" and are fairly common wherever found. Seventeen species are recognized by Kirby (*l. c.*, pp. 139-40).

The genus, as at present accepted, is composed of forms which were originally referred to at least four separate genera by their respective authors. Even now there seems to be quite a confusion as to their exact affinities, and only for convenience in assisting in their determination is the annexed imperfect key for their separation added.

At least eight of these forms are found in or near the regions in which the present material was taken.

SYNOPSIS OF THE SPECIES OF RODUNIA.

- A. Larger (σ^7 , 19-33 mm.; ♀ , 25-36+ mm.).
- b. Lateral carinæ of the pronotum parallel, straight. Antennæ ensiform, or more or less strongly flattened at their base.
 - c. Smaller (σ^7 , 21 mm.; ♀ , 27 mm.).
 - d. Pale green or testaceous.
 - e. The dorsum always pale green *læta* (Bolivar).
 - ee. The dorsum testaceous, sanguineo-punctate.
 - sanguinolenta* (Bolivar). - dd. Color smoky gray. Hind margin of the pronotum almost a right angle *angustata* (Bolivar).
- cc. Larger (σ^7 , 28-33 mm.; ♀ , ?).
- d. Testaceous or green. Smaller (σ^7 , 28 mm.; ♀ , 35 mm.).
 - basalis* (Walker). - dd. Fulvous; head and pronotum with two white lateral stripes.
 - Larger (σ^7 , 33 mm.; ♀ , ?) *interlineata* (Walker).
- bb. Lateral carinæ of the pronotum not parallel, either bowed or divergent. Antennæ variable.
- c. Pronotum with its lateral carinæ divergent behind.
 - d. Antennæ subensiform or ensiform *producta* (Walker).
 - dd. Antennæ filiform, or but little flattened basally.
 - e. Green or greenish testaceous. Vertex in front of the eyes somewhat angulate, longer than wide (Sudan, West Africa) *tricolor* (Karny).
 - ee. Olivaceous yellow. Vertex in front of the eyes short, rounded. (East Africa, in vicinity of Mozambique.)
 - mossambicensis* (Brancsic).
- cc. Pronotum with the lateral carinæ bowed inwards. Hind tibiæ red. Wings pellucid *inlyta* (Walker).
- AA. Smaller (σ^7 , 11.5-18 mm.; ♀ , 17-20 mm.).
- b. Lateral carinæ of the pronotum parallel. Antennæ subensiform or filiform.
 - c. Lateral carinæ becoming subobsolete posteriorly. General color rufo-fuscous *tricarinata* (Bolivar). - cc. Lateral carinæ continuous to the hind margin. Testaceous.
 - recta* (Walker).
- bb. Lateral carinæ of pronotum variable, but not parallel throughout. Antennæ more or less ensiform.
- c. Pronotal carinæ flexuous in front of their middle, divergent behind.
 - schulthessi* Kirby.
- cc. Pronotal carinæ divergent posteriorly.
- d. Antennæ with their basal joints strongly flattened, more or less ensiform.

- e. General color rufous or rufo-testaceous (British East Africa) *rufescens* (Kirby).
- ee. General color greenish-yellow or yellowish-green.
- f. Moderately robust (West Africa) *duria* (Karsch).
- ff. Rather slender (East Africa) *insipida* (Karsch).
- dd. Antennæ filiform, or with the basal joints but little flattened.
- e. Antennal joints a little flattened at base. Body somewhat robust. Griseo-testaceous (British East Africa).
elegans (Karny).
- ee. Antennæ filiform. Body slender. Flavo-testaceous (Sudan) *pharaonis* (Karny).

10. *Rodunia duria* (Karsch).

Duronia duria KARSCH, Stettin. Ent. Zeitschr., LVII, p. 252 (1906).

Rodunia duria KIRBY, Syn. Cat. Orth., III, p. 140 (1910).

Five males and three females of a small greenish grasshopper from Batanga, are referred to *Duronia duria* Karsch. They were collected by F. H. Hope, in April and May, 1914. C. M. Acc. No. 5293.

11. *Rodunia pharaonis* (Karny)?

Phlæoba pharaonis KARNY, Sitz. Akad. Wiss. Wien., Math.-Nat. Klasse, CXVI, pt. I, p. 103, pl. 3, fig. 52 (1907).

Rodunia pharaonis KIRBY, Syn. Cat. Orth., III, p. 140 (1910).

A second species of the genus is represented by four males and the same number of females, which were also taken by Hope at the same locality as the preceding, from February to April, inclusive.

While these specimens do not agree in every respect with the original description of *P. pharaonis*, they approach it more closely than they do any of the other described species.

Genus *CHRISTA* Karsch.

Christa KARSCH, Berlin. Ent. Zeitschr., XXXVIII, pp. 54, 75 (1893); KIRBY, Syn. Cat. Orth., III, p. 142 (1910).

Christa, like the preceding genus, is made up of several allied species which recall the American group *Orphulini*. As suggested in connection with *Rodunia* these insects are no doubt true "grasshoppers," and live among the grasses and other low-growing plants in meadows and openings in the forests, or even in open or prairie country.

12. *Christa compta* Walker.

Stenobothrus comptus WALKER, Cat. Derm. Salt. Brit. Mus., IV, p. 762 (1870).

Duronia virgula BOLIVAR, An. Soc. Españ. Hist. Nat., XIX, p. 310 (1890). For further synonymy see Kirby, Syn. Cat. Orth., III, p. 142 (1910).

Several specimens, nine males and four females, of a rather small locust collected by F. H. Hope at Batanga and by A. I. Good at Lolodorf, are referred to Walker's *Stenobothrus comptus*, which forms the type of the genus *Chirista*.

These specimens look very much like our *Orphulella pelidna* (Burmeister).

Genus HOLOPERCNA Karsch.

Holopercna KARSCH, Berlin. Ent. Zeitschr., XXXVI, 176 (1891).

13. *Holopercna gerstaeckeri* (Bolivar).

Duronia gerstaeckeri BOLIVAR, An. Soc. Españ., XIX, p. 311 (1890).

Holopercna gerstaeckeri KIRBY, Syn. Cat. Orth., III, p. 143 (1910).

Holopercna caelestis KARSCH, Stettin. Ent. Zeitschr., XXXVI, p. 177 (1891).

There are two male specimens of a locust from Lolodorf, which I refer to this species. They were collected by A. I. Good in August and October, 1913. C. M. Acc. No. 5264.

Genus RHABDOPLEA Karsch.

Rhabdoplea KARSCH, Berlin. Ent. Zeitschr., XXXVIII, pp. 54, 69 (1893); KIRBY, Syn. Cat. Orth., III, p. 147 (1910).

So far as at present known the representatives of the genus *Rhabdoplea* are confined to West Africa. Three species are known.

14. *Rhabdoplea mira* Karsch.

Rhabdoplea mira KARSCH, l. c., pp. 70, 71, fig. 9 (1893).

This species is represented by one male and five females coming from Batanga. There is also a second male from the same locality, which has greater length of wing, but otherwise does not differ from the description of this sex. All were taken by F. H. Hope in March and April, 1914. C. M. Acc. No. 5293.

Family LOCUSTIDÆ (Ædipodinae).

Genus MORPHACRIS Walker.

Morphacris WALKER, Cat. Derm. Salt. Brit. Mus., IV, p. 790 (1870); KIRBY, Syn. Cat. Orth., III, p. 218 (1910).

Cosmorhyssa STÅL, Recens. Orth., I, pp. 116, 121 (1873); SAUSSURE, Mém. Soc. Genève, XXVIII (9), pp. 50, 123 (1884), XXX (1), pp. 18, 37 (1888).

The insects belonging in this genus are found in Africa and those

parts of Europe and Asia, which border on the eastern Mediterranean. Four, or possibly five, species are known.

15. *Morphacris sulcata* (Thunberg).

Gryllus sulcatus THUNBERG, Mém. Acad., Petersb., V, p. 234 (1815), IX, pp. 396, 410 (1824).

Cosmorhyssa sulcata STÅL, Recens. Orth., I, p. 122 (1873).

Morphacris sulcata KIRBY, Syn. Cat. Orth., III, p. 219 (1910).

One female, Batanga (F. H. Hope), another of the same sex and a male, from Lolodorf (A. I. Good). C. M. Acc. Nos. 5293 and 5264.

Genus *ÆDIPODA* Serville.

Ædipoda SERVILLE Ann., Sci. Nat., XXII, p. 287 (1831); Ins. Orth., p. 718 (1839).

For further synonymy see Kirby, Syn. Cat. Orth., III, p. 238 (1910).

16. *Ædipoda cærulescens* (Linnaeus).

Gryllus Locusta cærulescens LINNEUS, Syst. Nat. (ed. 10), I, p. 432 (1758). For a rather full synonymy of this species see Kirby, *l. c.*, pp. 240-241.

There are two specimens, male and female, at hand. They were collected by Dr. W. J. Holland at Tangier, Morocco, in October, 1911. C. M. Acc. No. 4514.

Family PYRGOMORPHIDÆ.

The family *Pyrgomorphidæ* is one of the principal groups of African locusts and contains many very interesting forms. In fact, Kirby in his Synonymic Catalogue of the Orthoptera of the World, lists thirty-six distinct genera, members of which occur on the African continent and the immediately adjacent islands. Several of these locusts are among the most gaudily colored forms known. Others are recognized as destructive to agriculture, while still others are very bizarre in their appearance.

Genus *DICTYOPHORUS* Thunberg.

Dictyophorus THUNBERG, Mém. Acad. Petersb., V, pp. 217, 258 (1815); KIRBY, Trans. Ent. Soc. Lond., 1902, p. 88.

Petasia SERVILLE (*nec* Stephens), Ann. Sci. Nat., XXII, p. 278 (1831); *IB.*, Ins. Orth., p. 628 (1839); STÅL, Recens. Orth., I, pp. 12, 20 (1873), etc.

Topesia BOLIVAR, Bol. Soc. Esp. Hist. Nat., IV, p. 309 (1904); *IB.*, Gen. Ins., Fasc. 90, Orth. Acrid. Pyrg., p. 12 (1909).

17. *Dictyophorus laticinctus* Walker.

Petasia laticincta WALKER, Cat. Derm. Salt. Brit. Mus., III, p. 544 (1870); KIRBY, Syn. Cat. Orth., III, p. 305 (1910). For further synonymy see Kirby, *l. c.*

Two female specimens belonging in the genus *Dictyophorus*, as here limited, are referred to Walker's *laticincta*. They bear the label "Congo (Antisdel), C. M. Acc. 2315."

Genus PARAPETASIA Bolivar.

Parapetasia BOLIVAR, Bol. An. Soc. Españ. Hist. Nat., XIII, pp. 25, 484, 498 (1884); *IB.*, Bol. Soc. Esp. Hist. Nat., IV, p. 309 (1904); *IB.*, Gen. Ins., Fasc. 90, Orth. Acrid. Pyrg., p. 13 (1909).

18. *Parapetasia femorata* Bolivar.

Parapetasia femorata BOLIVAR, *ll. cc.*, pp. 485, 498, pl. 4, figs. 28, 28a-c (1884); p. 309 (1904), p. 14 (1909); KARSCH, Berlin Ent. Zeitschr., XXXVII, p. 70 (1898).

A single female is at hand. It comes from Efulen, Cameroon, where it was collected by Dr. H. L. Weber.

This specimen differs somewhat from Bolivar's description, but comes much closer to it than to *P. impotens* of Karsch. The specimen before me also comes from a region much closer to the locality, from which the species was described, than to the habitat of the second species, the latter coming from a region fully two thousand miles to the eastward.

Genus TAPHRONOTA Stål.

Taphronota STÅL, Öfv. Vet.-Akad. Förh., XXX, p. 51 (1873); *IB.*, Recens. Orth., I, pp. 11, 19 (1873); BOLIVAR, An. Soc. Españ. Hist. Nat., XIII, pp. 25, 472, 497 (1884); *IB.*, Bol. Soc. Esp. Hist. Nat., IV, p. 394 (1904); *IB.*, Gen. Ins., Fasc. 90, Orth. Acrid. Pyrg., p. 15 (1909).

Epamoholor KIRBY, Trans. Ent. Soc. Lond., 1902, p. 87 (immature).

All of the representatives of the genus *Taphronota*, so far as known, are confined to Africa. Fourteen species are listed in Kirby's Synonymic Catalogue of the Orthoptera.

19. *Taphronota merceti* Bolivar?

Taphronota merceti BOLIVAR, Bol. Soc. Esp. Hist. Nat., pp. 395, 398 (1904); KIRBY, Syn. Cat. Orth., III, p. 309 (1910).

A male specimen of a locust bearing the label "Congo (Antisdel). C. M. Acc. 2315" is doubtfully referred to Bolivar's *T. merceti*.

20. *Taphronota thælophora* (Stoll)?

Gryllus Locusta thalophorus STOLL, Spectres Saut., p. 32, pl. 16b, fig. 59 (1813).

Taphronota thalophora KIRBY, Syn. Cat. Orth., III, p. 310 (1910).

Two males, three females, and a nymph of the latter sex, seem to agree more closely with Stoll's *thalophorus* than with any of the other described species. They are accordingly referred to it. They bear the labels: "Batanga, Kamerun, F. H. Hope, Coll. C. M., Acc. 5293," 1 ♂, 2 ♀, 1 nymph; "Lolodorf, Kamerun, A. I. Good, Col. C. M. Acc. 5264," 1 ♂, 1 ♀.

Genus RUTIDODERES Westwood.

Rutidoderes WESTWOOD, in Drury, Ill. Exot. Ent., I, pp. 119, 120 (1837).

Peristegus BOLIVAR, An. Soc. Españ. Hist. Nat., XIII, pp. 25, 469, 497 (1884);

IB., Bol. Soc. Esp. Hist. Nat., IV, p. 401 (1904); IB., Gen. Ins., Fasc. 90, Orth. Acrid. Pyrg., pp. 16, 17 (1909).

21. *Rutidoderes squarrosus* (Linnaeus).

Gryllus Locusta squarrosus LINNÆUS, Mant. Plant., p. 533 (1771). For a rather full synonymy of this species see Kirby, Syn. Cat. Orth., III, p. 311.

There are two male specimens of this interesting locust at hand, which are from Lolodorf, where they were collected by A. I. Good in February, 1913, and July, 1914. C. M. Acc. No. 5264.

Genus ZONOCERUS Stål.

Zonocerus STÅL, Öf. Vet.-Akad. Förh., XXX (4), p. 51 (1873); IB., Recens.

Orth., I, pp. 10, 16 (1873); BOLIVAR, An. Soc. Españ. Hist. Nat., XIII, pp. 25, 457, 497 (1884); IB., Bol. Soc. Esp. Hist. Nat., IV, p. 418 (1904); IB., Gen. Ins., Fasc. 90, Orth. Acrid. Pyrg., pp. 17, 19 (1909).

22. *Zonocerus variegatus* (Linnaeus).

Gryllus Locusta variegatus LINNÆUS, Syst. Nat. (ed. 10), I, p. 432 (1758); IB., Mus. Ludov. Ulr., p. 144 (1764). For the synonymy of this species see Kirby Syn. Cat. Orth., III, p. 316.

The present collection contains specimens of *Z. variegatus* as follows: Batanga (F. H. Hope), 2 ♂, C. M. Acc. No. 5293; and Congo (Antisdel), 1 ♂, C. M. Acc. No. 2315.

Genus ATRACTOMORPHA Saussure.

Atractomorpha SAUSSURE, Ann. Soc. Ent. France (4), I, p. 474 (1861); STÅL,

Recens. Orth., I, p. 10 (1873); BOLIVAR, An. Soc. Españ. Hist. Nat., XIII, pp. 23, 63, 495 (1884); IB., Bol. Soc. Esp. Hist. Nat., V, p. 196 (1905); IB., Gen. Ins., Fasc. 90, Orth. Acrid. Pyrg., p. 39 (1909), etc.

Representatives of the genus *Atractomorpha* are common throughout most oriental countries. Especially is this true of the warmer regions. Some of the species are the common and even destructive "grasshoppers" of the countries where found. Several of them occur in both green and testaceous color-forms, while still others possess individuals which are even strongly tinged with rufous, vinaceous, and purple hues. At least six distinct species of the genus have been recognized from African territory, only two of which are contained in the present collections.

23. *Atractomorpha aberrans* Karsch.

Atractomorpha aberrans KARSCH, Ent. Nachr., IV, p. 333 (1888); BOLIVAR, Bol. Soc. Esp. Hist. Nat., V, pp. 197, 200 (1905).

The species *aberrans* Karsch is represented by five males and five females. They were collected in April and May, 1914, at Batanga by F. H. Hope. C. M. Acc. No. 5293.

24. *Atractomorpha gerstæckeri* Bolivar.

Atractomorpha gerstæckeri BOLIVAR, An. Soc. Españ. Hist. Nat., XIII, pp. 64, 66 (1884); IB., Bol. Soc. Esp. Hist. Nat., V, pp. 198, 208 (1905).

Truxalis crenulatus BEAUVOIS (*nec* Fabricius), Ins. Afr. Amer., p. 79, Orth., pl. 3, figs. 1a, 1b (1805).

Pyrgomorpha crenulata GERSTÆCKER (*nec* Fabr.), Arch. Naturg., XXXV (1), p. 216 (1869); IB., Von der Decken's Reise in Ost-Africa, Ins., p. 34 (1869).

Four males and six females are referred to this species, which seems to be quite widely distributed. It has been found in western, eastern, and southern Africa. The specimens before me are labelled, "Congo (Antidel), C. M. Acc. 2315," 1 ♀; "Batanga, Kamerun, F. H. Hope, Coll., C. M. Acc. No. 5293," 4 ♂, 4 ♀; and "Lolodorf, Kamerun, A. I. Good, C. M. Acc. No. 5264," 1 ♀.

Family CYRTACANTHACRIDÆ.

(Acridiidae.)

This family of locusts contains by far the greatest number of genera and species in almost all countries of both the Orient and Occident, as well as in the larger islands of the seas. Very many of them are true "grasshoppers" *i.e.*, they live among the grasses and low herbage of meadow, prairie, hillside, mountain slopes, clearings, and like

localities. Others are just as much at home among the vegetation of swamps, and woodlands. More forms of this family than of all the others combined have become adjusted to special food-plants and peculiar haunts, from which they seldom stray, except by accident. Hence the great diversity in structure, habits, color, etc., shown by different species. A very considerable number of genera and species have become wingless, or at least subapterous, so that frequently they are passed over, by ordinary collectors, who are unfamiliar with the group. Except by orthopterists they are generally considered immature, and consequently are not taken.

Genus OXYA Serville.

Oxya SERVILLE, Ann. Sci. Nat., XXII, pp. 264, 286 (1831); *IB.*, Ins. Orth., p. 675 (1839) and various authors to date.

This is an Old World genus and contains a number of species, which resemble each other rather closely. For the most part they are meadow-grasshoppers, and are prevailing grass-green in color, rather slender in form, and active in their movements.

25. *Oxya hyla* Serville.

Oxya hyla SERVILLE, *l. c.*, p. 287 (1831); KIRBY, Syn. Cat. Orth., III, p. 393 (1910).
Acridium hyla SERVILLE, *l. c.*, p. 678, pl. 12, fig. 4 (1839).
Heteracris viridivittata WALKER, Cat. Derm. Salt. Brit. Mus., IV, p. 660 (1870).
Oxya serrulata KARSCH, Zoöl. Jahrb., Syst., V, p. 662, pl. 45, figs. 8, *8a*, *b* (1891);
 BRUNNER VON WATTENWYL, Ann. Mus. Genova, XXXIII, pp. 151, 152 (1893).

Batanga, F. H. Hope, Collector, two males, two females; Lolodorf, one male and one female, A. I. Good, Collector.

Genus SPATHOSTERNUM Krauss.

Spathosternum KRAUSS, Sitz. Akad. Wiss. Wien., Math.-Nat. Cl., LXXXVI, p. 44 (1877); STÅL, Bihang, Svensk. Akad. Handl., V (4), pp. 50, 97 (1878).

26. *Spathosternum pygmæum* Karsch.

Spathosternum pygmæum KARSCH, Berlin, Ent. Zeitschr., XXXVIII, p. 110 (1893).

Four males and two females from Batanga are referred to Karsch's *pygmæum*. They were collected by F. H. Hope in March and April, 1914. C. M. Acc. No. 5293.

Genus OXYRRHEPES Stål.

Oxyrrhæpes STÅL, Öfv. Vet.-Akad. Förh., XXX (4), pp. 40, 53 (1873); *IB.*, Recens. Orth., I, pp. 40, 79 (1873), etc.

27. *Oxyrrhypes procera* (Burmeister).

Oxya procera BURMEISTER, Handb. Ent., II, p. 635 (1838).

Oxyrrhypes procera BOLIVAR, An. Soc. Españ. Hist. Nat., XV, p. 343 (1886).

Oxyrrhypes procerus KARSCH, Berlin. Ent. Zeitschr., XXXVIII, pp. 112, 113 (1893).

Specimens of this locust are at hand as follows: from Batanga, one male and one female (F. H. Hope, Coll.); from Lolodorf, one female (A. I. Good, Coll.); Banza Manteka, Belgian Congo, one male (A. L. Bain, Coll.).

Genus *CYRTACANTHACRIS* Walker.

Cyrtacanthacris WALKER, Cat. Derm. Salt. Brit. Mus., III, p. 550 (1870).

Acrydium in part, OLIVIER, Encycl. Méth., Ent., VI, p. 209 (1791). For synonymy of genus see Kirby, Syn. Cat. Orth., III, p. 446 (1910).

The insects, which are included in this genus, for almost a century have been quite generally referred to *Acridium*. According to the rules of zoölogical nomenclature, however, *Acridium* must be employed to receive the various species of *Tetrigidæ* so long referred to the genus *Tettix*, as restricted in comparatively recent years. The next available name seems to be Walker's *Cyrtacanthacris*. At least seventy-five supposedly distinct species of the genus are recorded in Kirby's Catalogue, *l. c.*, pp. 446-454.

28. *Cyrtacanthacris lineata* (Stoll).

Gryllus Locusta lineatus STOLL, Spectres Saut., p. 31, pl. 15*b*, fig. 57 (1813). For further synonymy see Kirby, *l. c.*, p. 450.

The present collection contains five specimens, two males and three females, which are referred to Stoll's *lineata*. They were taken at Lolodorf and Batanga, and were collected by A. I. Good and F. H. Hope.

29. *Cyrtacanthacris ruficornis* (Fabricius).

Gryllus ruficornis FABRICIUS, Mant. Ins., I, p. 237 (1787). For synonymy see Kirby, *l. c.*, p. 450.

Specimens are at hand as follows: a single female bearing the label "Banza Manteka, Belg. Congo, Coll. A. L. Bain, C. M. Acc. No. 4686," "Lolodorf, Kamerun, A. I. Good, Coll., C. M. Acc. 5264."

Genus *SCHISTOCERCA* Stål.

Schistocerca STÅL, Recens. Orth., I, p. 64 (1873), and numerous authors since.

As in the case of the preceding, this genus is composed of large and showy insects. It, however, is practically confined to the New World,

while the other is oriental in its distribution. About the same number of species belong to each. Only one species of *Schistocerca* is found east of the Atlantic, and it is supposed to have reached Africa from the Occident, where it is also rather widely distributed. The genus contains several well-known pests.

30. *Schistocerca tartarica* (Linnæus).

Gryllus (Locusta) tartaricus LINNÆUS, Syst. Nat. (Ed. 10), I, 432 (1758). For a quite full synonymy of this species see Kirby, Syn. Cat. Orth., III, p. 459.

The species is represented by two males and two females. They come from the Congo (Antisdell). C. M. Acc. No. 2315.

This insect is one of the chief migratory locusts of southern Europe and northern Africa. It is also a widely distributed species in tropical America. A very extensive literature exists, based on this and other destructive and migratory locusts.

Genus ABISARES Stål.

Abisares STÅL, Bihang, Svensk. Akad. Handl., V, (4), p. 29 (1878); BRUNNER, Ann. Mus. Genova, XXXIII, p. 143 (1893).

The present genus was established for a single African species.

31. *Abisares viridipennis* (Burmeister).

Monochidium viridipenne BURMEISTER, Handb. Ent., II, p. 626 (1838); KIRBY, Syn. Cat. Orth., III, p. 466 (1910).

Two males of a medium-sized locust from Batanga are referred to Burmeister's *Monochidium viridipenne*, for which Stål proposed the generic name *Abisares*. They were collected by F. H. Hope in April, 1914. C. M. Acc. No. 5293.

Genus COPTACRA Stål.

Coptacra STÅL, Recens. Orth., I, pp. 37, 58 (1873); BRUNNER, Ann. Mus. Genova, XXXIII, p. 143 (1893); BOLIVAR, Ann. Soc. Ent. France, LXX, p. 624 (1902).

This genus is composed of less than a dozen species of small, modestly colored locusts. One of their distinguishing characters is the broad, flat, coarsely punctulate frontal costa.

32. *Coptacra succinea* Krauss.

Coptacra succinea KRAUSS, Sitz. Acad. Wiss. Wien., Math.-Nat. Cl. LXXVI, (1), p. 34 (1877); KARSCH, Berlin Ent. Zeitschr., XXXVIII, p. 92 (1893).

The species is represented by two males and four females, bearing the label "Batanga, Kamerun, F. H. Hope, Coll., C. M. Acc. 5264" and two females with the label "Lolodorf, Kamerun, A. I. Good, Coll., C. M. Acc. 5293."

33. *Coptacra anguliflava* Karsch.

Coptacra anguliflava KARSCH, *l. c.*, p. 92 (1893).

Three male specimens of a second species of the genus *Coptacra* are referred to *anguliflava* Karsch. They were taken by F. H. Hope in March and April, 1914, at Batanga.

Genus CYPHOCERASTIS Karsch.

Cyphocerastis KARSCH, Berlin, Ent. Zeitschr., XXXVI, p. 181 (1891); BOLIVAR, Ann. Soc. Ent. France, LXX, p. 625 (1902); KIRBY, Syn. Cat. Orth., III, p. 471 (1910).

The representatives of the present genus are rather small or medium-sized locusts which seem to be confined to tropical Africa. Three species have been described thus far. Two additional forms are now added. They may be distinguished by the subjoined key.

KEY FOR SEPARATING THE SPECIES OF CYPHOCERASTIS.

- A. Tegmina and wings fully developed, reaching the tip of the abdomen or apex of the hind femora. Wings with the disc usually cerulean.
 - b. General color of insect black, more or less conspicuously marked with yellow. Antennæ entirely black. *lata* Karsch.
 - bb. Color of insect more or less testaceous or olivaceous varied with black.
 - c. Posterior tibiæ and tarsi ferruginous, the femora subannulate with fuscous. Apex of antennæ white. *tristis* Karsch.
 - cc. Posterior tibiæ and tarsi variable, but not ferruginous. Antennæ not tipped with white.
 - d. Posterior femora externally longitudinally streaked with fuscous at middle. Hind tibiæ and tarsi fusco-testaceous.
 - clavareani* Bolivar.
 - dd. Posterior femora internally and below blood-red, externally black, with six large conspicuous yellow maculations, two below and four above. Hind tibiæ almost black, with a dark grayish prebasal annulus. The tarsi tinged with vinaceous. Under side of the abdomen strongly tinged with red. *picturata* n. sp.
- AA. Tegmina and wings somewhat abbreviated, considerably shorter than the abdomen in both sexes. Disc of hind wings dull ferruginous. *hopei* n. sp.

34. *Cyphocerastis picturata* n. sp.

A medium-sized, dark, and rather highly colored insect, with the lower sulcus and inner face of the hind femora and lower side of the abdomen deep blood-red. The head, pronotum, pleura of metathorax, and upper edge and outer face of hind femora prominently marked with bright yellow. Wings cerulean with fuscous apex.

Head and thorax strongly and coarsely punctulate, the former about as wide as the front edge of the pronotum, the eyes rather prominent, fully twice as long as wide, separated above by a space a little less than the diameter of the basal antennal joint, the vertex rather deeply sulcate, and provided with a median and longitudinal carina of nearly equal prominence with the lateral ones, the fastigium a little depressed and broadly sulcate; frontal costa between the antennæ prominent and fully twice the width of the vertex or the diameter of the basal antennal joints, narrowing a little below the ocellus and fading towards the clypeus; lateral carinæ of the face parallel, moderately prominent throughout; antennæ black, filiform, a little longer than the head and pronotum combined, the subapical joints somewhat flattened and closely pitted. Pronotum provided with a prominent median carina; the three transverse sulci of nearly equal prominence, the anterior margin at middle gently rounded, the apex obtusely angled. Tegmina of moderate width, reaching the apex of the hind femora and tip of the abdomen. Hind femora rather robust basally, slender apically; the superior carina somewhat serrate; hind tibiæ slender, prominently hirsute, with ten spines on their outer margin and eleven internally. Prosternal spine short, acuminate; the mesosternal lobes widely separated, those of the metasternum narrowly so. Valves of the ovipositor elongate, slender, exerted, the apices rather strongly hooked.

General color above dull black, becoming fusco-olivaceous on the disc of the pronotum and dorsal portion of the closed tegmina and the abdomen above. Anterior and middle legs olivaceous; meso- and metasternum olivaceous, lower surface of the abdomen vinaceous red. Hind femora shining black, varied with bright yellow above and externally, below and on their inner face blood-red. Vertex, fastigium, a dot back of each eye and considerable portion of the face and cheeks below the eyes, bright lemon-yellow. Pronotum above at its sides in advance of the first transverse sulcus and behind the second sulcus to the hind margin prominently striped with yellow; the lateral lobes

are also varied with yellow, there being a prominent patch of this color both at the anterior and posterior lateral angles, as well as one on the pleura above the base of each hind femur.

Length of body, ♀, 24 mm.; of pronotum, 5.25 mm.; of tegmina, 18 mm.; of hind femora, 13 mm.; of hind tibiæ, 12 mm.

Habitat: The only specimen at hand, the type, comes from Lolodorf, where it was taken by A. I. Good. C. M. Acc. No. 5264.

35. *Cyphocerastis hopei* n. sp.

A little below medium in size. Tegmina and wings abbreviated, about two-thirds the length of the abdomen. Legs, front, occiput, upper part of the abdomen and dorsum of the pronotum and superior portion of the folded tegmina, olivaceous. Lower half of lateral lobes of the pronotum, cheeks below the eyes, and the pleura, banded with flavous; upper half of the sides of pronotum, anterior half of tegmina, and ventral part of the body, antennæ, and genicular portion of the hind femora, black; the hind tibiæ also black, hirsute, without basal or prebasal pale annulation.

Head and pronotum rather coarsely and closely punctulate; the former not prominent, about as wide as the front edge of the pronotum, the eyes prominent, one and one-half times as long as wide, separated at the vertex by a space about equal to the diameter of the first (♀) or second (♂) antennal joint, the vertex deeply sulcate, and provided with a median longitudinal carina which continues backwards across the occiput to its base; fastigium of the vertex a little depressed, sulcate, and punctulate, the frontal costa broad and also prominently punctulate, narrowing below the ocellus and continuous to the clypeus; lateral or facial carinæ broadly bowed outward at center, prominent, of equal prominence throughout. Antennæ a little heavy, extending one-third of their length beyond the hind margin of the pronotum. Latter gently divergent towards its base, the median carina coarse, somewhat interrupted by the punctures and transverse sulci; anterior margin at middle rounded and a little advanced upon the occiput, hind margin obtusangulate. Tegmina rather profusely and strongly veined and reticulate, their apex rounded. Anterior and middle legs slender, the femora, even in the male, but faintly incrassate; hind femora rather elongate, slender apically, the hind tibiæ lengthily hirsute, the outer margin provided with nine and the inner with ten or eleven spines. Mesosternal lobes widely separated in both sexes,

those on the metasternum nearly contiguous in the male, but somewhat distant in the female. Prosternal spine rather large at base, short, evenly pyramidal, the apex acuminate. Apex of male abdomen scarcely clavate, the last ventral segment short; supra-anal plate moderately large, the basal half with parallel sides and prominent lateral carinæ, the apical half separated from the basal by a strong transverse sulcus, tapering, and with the outer portion spatulate, the middle sulcate, the apophyses of the preceding segment fairly robust at base, bowed inward until they touch, the apical half slender and parallel, resting in the median longitudinal sulcus of the supra-anal plate which they fully occupy. Cerci of the male rather long, moderately robust and hirsute, directed upwards and bowed inwards for three-fifths of their length, from which point they are directed backwards and become smooth and more slender, their apices bluntly acuminate and extending beyond the tip of the last ventral segment.

Length of body, ♂, 17 mm., ♀, 20 mm.; of pronotum, ♂, 4 mm., ♀, 5 mm.; of tegmina, ♂, 8.5 mm., ♀, 10 mm.; of hind femora, ♂, 10 mm., ♀, 12 mm.

Habitat: Batanga. Two males and two females, taken by F. H. Hope. C. M. Acc. No. 5293. The types are in the Carnegie Museum.

Genus PTEROPERA Karsch.

Pteropera KARSCH, Berlin, Ent. Zeitschr., XXXVI, pp. 185, 189 (1891); KIRBY, Syn. Cat. Orth., III, p. 473 (1910).

The locusts included in this genus are medium-sized insects, with greatly abbreviated tegmina and without wings. They seem to be confined to the western coastal regions of tropical Africa. Three species have been previously described. A fourth is now added. The chief character of the genus seems to be the absence of a longitudinal sulcus on the exterior median field of the hind femora, the sulci and costæ of the area being arcuate and continuous. The various species may be separated as follows:

KEY TO THE SPECIES OF PTEROPERA.

- A. Hind femora without dark markings. Pronotum lacking the lateral longitudinal piceous band. *uniformis* n. sp.
 A.A. Hind femora more or less varied with black or fuscous. Pronotum marked with a longitudinal dusky band along the upper field of its lateral lobes.
 b. Smaller (♂, 21 mm.; ♀, 28 mm.). General color pale olivaceous

- yellow. Hind tibiæ, except for a pale subbasal annulus, shining black. *verrucigena* Karsch.
- bb. Larger (♂, 22 mm.; ♀, 30 mm.). General color grayish or clay-yellow. Hind tibiæ not black.
- c. Hind tibiæ griseo-testaceous. *pictipes* Bolivar.
- cc. Hind tibiæ blue at base, followed by a yellow annulus and beyond sanguineous. *karschi* (Bolivar).

36. *Pteropera uniformis* n. sp.

As indicated by the synoptic key this insect is but slightly varied with dark markings, its general color being brunneo-olivaceous.

Head a little wider than the anterior margin of the pronotum. Eyes somewhat prominent, about one and one-half times as long as wide, and fully twice the length of the cheeks below them, separated above by a space about equal to the diameter of the basal antennal segment; the vertex depressed, sulcate, and provided with a more or less apparent median longitudinal carina which extends upon the occiput. Fastigium punctulate, not sulcate, roundly connected with the upper extremity of the frontal costa. Face a little oblique or receding, rugosely punctulate; the costa of nearly equal width throughout, but little sulcate at any point, continuous to the clypeus. Antennæ moderately slender, reaching to the apex of the mesonotum. Pronotum rather profoundly and rugosely punctulate, a little expanding to the rear, the three transverse sulci well marked, cutting or severing the median carina; anterior margin a little advanced upon the occiput, triangularly notched at its middle, the posterior margin almost straight and with the middle also triangularly notched or emarginate. Tegmina small, lateral, their tips rounded and reaching the tip of the metanotum. Legs about normal for the genus. Prosternal spine rather large, pyramidal, its apex a little blunt, gently directed to the rear. Valves of the ovipositor somewhat slender, their apices only gently hooked. General color brunneo-olivaceous, varied with only slight indications of the dusky markings mentioned for other species. Face, cheeks below the eyes, lower third of sides of pronotum and the metapleura pallid. Genicular portion of the hind femora and immediate base of the hind tibiæ pale testaceo-ferruginous. Antennæ pallid, not infuscated.

Length of body, ♀, 26 mm.; of pronotum, 5 mm.; of antennæ, 12 mm.; of tegmina, 5.15 mm.; of hind femora, 15 mm.

Habitat: Batanga, Cameroon, F. H. Hope, collector, two specimens, type and paratype. C. M. Acc. No. 5293.

Genus ORBILLUS Stål.

Orbillus STÅL, Recens. Orth., I, pp. 37, 71 (1873); IB., Bihang, Svensk. Akad. Handl., V (4), p. 29 (1878); BRUNNER, Ann. Mus. Genova, XXXIII, p. 144 (1893).

Orbillus is an African genus containing six known species. These insects are of average size and very probably have special food-habits and definite haunts.

37. *Orbillus cærulens* (Drury).

Gryllus cærulens DRURY, Ill. Nat. Hist., II, p. 79, pl. 42, fig. 1 (1773).

Locusta cærulea WESTWOOD, in Drury, Ill. Exot. Ent., II, p. 89, pl. 42, fig. 1 (1837).

Among the specimens from Batanga are two pairs of this species. They were collected in April, 1914, by F. H. Hope. C. M. Acc. No. 5293.

Genus CATANTOPS Schaum.

Catantops SCHAUM, Bericht. Akad. Berlin, 1853, p. 779; IB., Peters, Reise. n. Mosamb., Zoöl., V, p. 134 (1862); STÅL, Recens. Orth., I, pp. 37, 69 (1873); KARNY, Sitz. Akad. Wiss. Wien., Math.-Nat. Kl., CXVI, p. 309 (1907). For additional synonymy see Kirby, Syn. Cat. Orth., III, p. 476.

The genus *Catantops* is confined to the Old World with its center of abundance in Africa. Its members are, as a rule, medium-sized insects of modest coloration, though some of the species are brightly and strikingly colored. Kirby lists one hundred and three, and a supposedly additional species is described in this paper. Karny has given us a very comprehensive review of the genus in his article on "Die Orthopterenfauna des Ägyptischen Sudans," pp. 43-86. Apparently this genus is in the Old, what *Melanoplus* is in the New World, *i.e.*, the prevailing group of generally distributed common grasshoppers.

38. *Catantops mellitus* Karsch.

Catantops mellitus KARSCH, Berlin, Ent. Zeitschr., XXXVIII, pp. 94, 96 (1893); KARNY, Sitz. Akad. Wiss. Wien., Math.-Nat., Kl., CXVI, pp. 315, 335 (1907).

There are three specimens, one male and two females from Batanga, where they were collected by F. H. Hope. C. M. Acc. No. 5293.

39. *Catantops uniformis* n. sp.

A single male specimen of another species of the genus is before me. It seems to be new and in the arrangement of species belongs near

C. decoratus Gerstaecker, and *C. major* Karny. The specific name is suggested by its very uniform and rather pale rufo-testaceous color. While quite large, it is nevertheless moderately slender in its build, has the tegmina and wings decidedly longer than the abdomen and apex of the hind femora. The latter have their dorsal margin crossed by two dull fuscous patches and especially with a fairly prominent longitudinal stripe, which extends along the lower carina from the inner edge of the pale pre-apical annulus half-way to the base, from which point the greater portion of the inner face is infuscated; lower outer sulcus brunneous, the lower inner one more or less tinged with coral-red, genicular area strongly fuscous, all of the carinae minutely nigro-punctate; hind tibiae dull cinereous, the base with a well-defined paler annulus, the spines black on their outer half, ten in number on the outer and eleven on the inner margin. Hind wings vitreous, with dark veins and cross-veins, about twice as long as broad. Antennae pallid, testaceous. Supra-anal plate elongate scutiform, the apex rather acuminate; cerci moderately slender, bowed upwards and inwards, the apical portion a little dilated and obliquely docked from below. Mesosternal lobes rather closely approaching, those of the metasternum touching.

Length of body, ♂, 33 mm.; of pronotum, 7 mm.; tegmina, 27 mm.; of hind femora, 17 mm.

Habitat: Banza Manteka, Belgian Congo (A. L. Bain, Collector). C. M. Acc. No. 4601.

40. *Catantops kraussi* Karny.

Catantops kraussi KARNY, *l. c.*, pp. 321, 345 (1907); KIRBY, *Syn. Cat. Orth.*, III, p. 479 (1910).

Two males and three females of a third species of *Catantops* are referred to this species. They come from Batanga, and were collected by F. H. Hope. C. M. Acc. No. 5293.

41. *Catantops melanostictus* Schaum.

Catantops melanostictus SCHAUM in Peters, *Reise n. Mossamb.*, Zoöl., V, p. 134, pl. 7A, fig. 5 (1862); KARNY, *l. c.*, pp. 315, 336, pl. 2, figs. 16-20, pp. 350, 351 (1907). For additional synonymy see Kirby, *l. c.*, p. 480.

A single male specimen of this locust is at hand. It was collected by F. H. Hope at Batanga in April, 1914.

42. *Catantops mimulus* Karsch.

Catantops mimulus KARSCH, Berlin Ent. Zeitschr., XXXVI, p. 189 (1891); KARNY, *l. c.*, pp. 316, 336 (1907).

The collection contains a pair, male and female, of what appears to be *C. mimulus* Karsch. They were taken in April, 1914, by F. H. Hope. C. M. Acc. No. 5293.

43. *Catantops æsthmaticus* Karsch.

Catantops æsthmaticus KARSCH, Berlin Ent. Zeitschr., XXXVIII, pp. 95, 98, fig. 14 (1893); KARNY, *l. c.*, pp. 316, 336 (1907).

A single female specimen bearing the label "Congo (Antidel), C. M. Acc. 2315" is referred to Karsch's *C. æsthmaticus*.

Genus STENOCROBYLUS Gerstæcker.

Stenocroblylus GERSTÆCKER, Arch. Naturg., XXXV, p. 219 (1869); *IB.*, Von der Decken's Reise in Ost-Afrika, III (2), p. 45 (1873); STÅL, Bihang Svensk. Akad. Handl., V, no. 4, p. 29 (1878); KIRBY, Syn. Cat. Orth., III, p. 485 (1910).

This genus was erected to receive an insect related to representatives of the genus *Catantops*, but which differs in having remarkably abbreviated hind tibiæ, as well as in a few other respects. Since Gerstæcker described his *Stenocroblylus cervinus*, which was the type of the genus, seven others have been added. Now an eighth is described.

The annexed table may be of value in separating the species. It will be observed that among the species there is quite a range of variation in tibial length, spine-formulæ, and color-pattern.

SYNOPSIS OF THE SPECIES OF STENOCROBYLUS.

- A. Insects rather plainly colored, not banded and maculate with bright yellow.
Hind tibiæ noticeably shorter than the femora.
- b. General color above rufous, below testaceous, or greenish.
c. Larger (♂, 24 mm.; ♀, 32 mm.). Habitat, Africa.
cervinus Gerstæcker.
- cc. Smaller (♂, ?; ♀, 20 mm.). Habitat, Southern India.
femoratus Bolívar.
- bb. General color above smoky black, below testaceous. Size (♂, ?; ♀, 32 mm.). Habitat, Angola, West Africa. *fumosus* Bolívar.
- AA. Insect conspicuously streaked, mottled, and banded with yellow testaceous and black. Hind tibiæ variable as to length and the number of spines externally.
- b. Less conspicuously marked. The prevailing color pale testaceous.

ferruginous, the pronotum, pleura, and hind femora marked with maculae, lines, and bands of black. Wings pale rose, becoming flavous apically (σ^7 , ?; ♀ , 25 mm.). Habitat, Congo

roseus Giglio-Tos.

bb. More conspicuously colored or marked. The prevailing color variable but the markings yellow.

c. Wings pale blue, the margins and apex somewhat infuscated. Size (σ^7 , ?; ♀ , 25 mm.). Habitat, Congo. *cyaneus* Bolivar.

cc. Wings variable, but never blue or bluish.

d. Wings smoky orange at base, becoming fuscous apically.

e. Smaller (σ^7 , 21 mm.; ♀ , 28 mm.). Head, pronotum, sides of meso- and meta-thorax and hind femora shining black, conspicuously mottled and banded with yellow. Geniculae and hind tibiae with tarsi carmine.

festivus Karsch.

ee. Larger (σ^7 , 26 mm.; ♀ , 32 mm.). Head, with front and cheeks anteriorly flavous, occiput and cheeks back of eyes, dorsum, middle of lateral lobes of pronotum, together with sides of meso- and metathorax and hind femora with two wide bands and apex black; the occiput at sides, the pronotum at sides of disc, and on lower edge, the pleura above the coxae of median and posterior legs streaked with yellow, hind femora also conspicuously marked with yellow. Hind tibiae fuscous.

catantopoides sp. nov.

dd. Wings more pallid, greenish, or amber.

e. Larger (σ^7 , 28 mm.; ♀ , ?). Disc of wings greenish. Antennae very long. *antennatus* Bolivar.

ee. Smaller (σ^7 , 21 mm.; ♀ , 30 mm.). Disc of wings pale amber. Antennae normal. *ornatus* Giglio-Tos.

44. *Stenocrobylus festivus* Karsch.

Stenocrobylus festivus KARSCH, Berlin. Ent. Zeitschr., XXXVI, p. 190 (1891); * KIRBY, Syn. Cat. Orth., III, p. 485 (1910).

A. I. Good collected one male and two females of *S. festivus* at Lolodorf in August, 1913. C. M. Acc. No. 5264.

45. *Stenocrobylus catantopoides* n. sp.

Similar to *S. antennatus* Bolivar in color and markings, as well as in the unusual length of the antennae, but considerably smaller, and having the general color above dark fuscous, instead of fuscous green. The present species also is noted for the nearly or quite normal length of the hind tibiae with nine spines externally as in some of the representatives of the genus *Catantops*, hence the suggested specific name.

Head of moderate size, about as wide as the anterior portion of the pronotum, the occiput rounded and slightly ascending, comparatively short; eyes large and prominent, in both sexes somewhat longer than the anterior edge of the cheeks below them; vertex a little depressed, in the male as wide as the diameter of the second, and in the female as that of the first antennal joints, very narrowly and gently longitudinally sulcate, the fastigium of moderate size, subquadrate, about as long (σ^7) or not quite (φ) as wide, the disc flat, surrounded by coarse carinae in continuation of those of the vertex; frontal costa a little wider than the vertex, prominent above between the antennae, less so below the ocellus, punctulate, plain in the female, broadly and shallowly sulcate in the male, continuous to the clypeus, sulcate in both sexes at the ocellus and below. Antennae rather robust, in the male nearly as long as the hind femora, in the female a little shorter. Pronotum strongly punctulate, on the hind lobe very closely so, anterior lobe with the sides parallel, the posterior one rather strongly divergent, median carina prominent on hind, less so on front lobe, thrice interrupted by the well-defined transverse sulci, anterior margin gently rounded, angulate behind. Tegmina and wings fully developed in both sexes, surpassing both the tip of the abdomen and the apex of the hind femora, rather profusely and heavily veined. Anterior and middle legs comparatively slender, even in the male; hind femora elongate, somewhat robust at base, with large geniculæ, the hind tibiae elongate, the exterior margin nine-spined, interior margin ten-spined. Prosternal spine elongate, directed a little to the rear, large, coarse, its apex rounded; mesosternal lobes decidedly rounded internally, separated by a space a trifle wider than long, metasternal lobes also separated, but the space much narrower than that of the mesosternum. Male abdomen tapering, the apical segment acuminate, its apex entire; supra-anal plate elongate triangular, deeply sulcate at center to middle, tumid apically, and with a prominent transverse carina just back of the middle. Anal cerci not quite reaching the apex of the supra-anal plate, slender, bowed, directed to the rear and inwards, their apex a little flattened, blunt; valves of ovipositor elongate, curved, acuminate, not prominently toothed.

General color above dark fuscous, with a tinge of olive on the dorsum of the pronotum and dorsal field of tegmina and legs; front, abdomen, and underside flavous with a tinge of olive or green. Occiput at side, outer margins of the disc and lower margins of the pro-

notum, prominently streaked with yellow; meso- and meta-thorax obliquely streaked with the same color. Hind femora black, thrice banded with yellow, this latter color interrupted externally in the basal and median bands, so as to give a maculate appearance to this member; tibiæ fuscous, the base widely flavo-annulate; antennæ testaceous, a little darker apically.

Length of body, ♂, 26 mm., ♀, 28 mm.; of pronotum, ♂, 5.15 mm., ♀, 6.85 mm.; of tegmina, ♂, 20 mm., ♀, 27 mm.; of hind femora, ♂, 15 mm., ♀, 17 mm.; of hind tibiæ, ♂, 12 mm., ♀, 15 mm.

Habitat: Batanga, F. H. Hope, collector, taken in April, 1914. One male and one female, the types, are the only representatives of the species. C. M. Acc. No. 5293.

Genus EUPREPOCNEMIS Fieber.

Euprepocnemis FIEBER, *Lotos*, III, p. 98 (1853); IV, p. 178 (1854); *IB.*, *Syn. Eur. Orth.*, p. 9 (1854).

Euprepocnemis STÅL, *Recens. Orth.*, I, p. 75 (1873), etc. (See Kirby, *l. c.*, p. 559.)

Africa seems to be the center of distribution for members of this genus, although it is represented over most of the Orient, extending even into some of the islands of the Pacific. Eighteen species are recognized in Kirby's Catalogue.

46. *Euprepocnemis plorans* (Charpentier).

Gryllus plorans CHARPENTIER, *Hor. Ent.*, p. 134 (1825); RAMBUR, *Faune Andal.*, II, p. 78 (1838). See synonymy in Kirby, *Syn. Cat. Orth.*, III, p. 560.

Specimens of *E. plorans* are at hand from Lolodorf and Batanga. A male and two females were taken by A. I. Good at the former locality and a male by F. H. Hope at the latter.

Specimens of this species are in the collection of the writer from both China and Japan.

47. *Euprepocnemis guineënsis* Krauss.

Euprepocnemis guineënsis KRAUSS, *Zoöl. Jahrb., Syst.*, V, p. 659, pl. 45, fig. 5 (1891).

Euprepocnemis guineënsis var. *maculosa* KRAUSS, *l. c.*, p. 660, pl. 45, figs. 6, 6A (1891).

I find a female specimen which is referable to *E. guineënsis* Krauss. It is from Lolodorf, where it was collected by A. I. Good. C. M. Acc. No. 5264.

Genus *CALLIPTAMUS* Serville.

Calliptamus SERVILLE, Ann. Sci. Nat., XXII, p. 282 (1831); *IB.*, Hist. Orth., 686 (1839); FISCHER, Orth. Ross., pp. 228, 236 (1846); JACOBS & BIANCHI, Prem. i Lozhn. Ross. Imp., pp. 173, 204, 316 (1902); KIRBY, Syn. Cat. Orth., III, p. 551 (1910), for synonymy see Kirby, *l. c.*

This genus is confined to the Eastern Hemisphere, and contains several species, one or two of which at times are pests.

48. *Calliptamus italicus* (Linnæus).

Gryllus Locusta italicus LINNÆUS, Syst. Nat. (Ed. 10), I, p. 432 (1758). For a very full synonymy see Kirby, *l. c.*, pp. 551-553.

. There are two female specimens of this common, but very interesting locust at hand. They were collected by Dr. W. J. Holland in October, 1911, at Tangier, Morocco. C. M. Acc. No. 4514.

The specimens are in exceptionally fine condition both as to color and preservation.

Suborder *TETTIGONOIDEA*.Family *GRYLLACRIDÆ*.

This family is made up of a number of forms, which for the most part lack the auditory openings on the anterior tibiæ, and are without stridulating apparatus in the males, in cases where this sex is provided with wings. Kirby lists sixteen genera in his Catalogue.

Genus *GRYLLACRIS* Serville.

Gryllacris SERVILLE, Ann. Sci. Nat., XXII, p. 138 (1831); *IB.*, Hist. Nat. Ins. Orth., p. 392 (1839); BRUNNER VON WATTENWYL, Verh. Zoöl.-Bot. Ges. Wien., XXXVIII, pp. 316, 317 (1888), etc., etc.

This genus is composed of many species and is quite widely distributed over the surface of the earth, especially in tropical and subtropical regions, where these insects abound in moist, dark localities. They are nocturnal in their habits, and sometimes when on the wing are attracted to lights where they may be collected.

49. *Gryllacris quadripunctata* Brunner.

Gryllacris quadripunctata BRUNNER, Verh. Zoöl.-Bot. Ges. Wien, XXXVIII, p. 357 (1888); KIRBY, Syn. Cat. Orth., II, p. 145 (1906).

Two males of this genus taken by A. I. Good at Lolodorf in May, 1914, are referred to *G. quadripunctata* Brunner. C. M. Acc. No. 5264.

50. *Gryllacris africana* Brunner.

Gryllacris africana BRUNNER, *l. c.*, pp. 325, 362 (1888); KIRBY, *l. c.*, p. 147 (1906).

A pair, male and female, from Lolodorf, taken by A. I. Good in May, 1914, are referred to *G. africana* Brunner. C. M. Acc. No. 5264.

Family HETRODIDÆ.

The representatives of the family Hetrodidæ are remarkable in appearance. Many of them are ornamented with long spine-like projections on the disk and along the borders and lateral carinæ of the pronotum, while others have this part smooth. The group is native to the continent of Africa, to southern and southeastern Europe, and southwestern Asia. Fourteen genera have thus far been recognized and described by orthopterists, and fifty-seven species assigned to them.

51. *Cosmoderus* ? sp.?

A single very immature nymph is contained among the specimens collected by F. H. Hope at Batanga. It was taken in March, 1914. C. M. Acc. No. 5293. It seems to be referable to the genus *Cosmoderus* rather than to any other. It is chiefly deep shining black, with the anterior and median femora almost wholly, and the posterior ones on their apical two-fifths or one-half, pale testaceous. The median and posterior tibiæ are also largely tinged with this color, except at their base and apex. The antennæ are robust at base and slender apically, the basal ten joints are black, while those beyond are pallid. Both the disc of the pronotum and the dorsal portion of the abdominal segments are very conspicuously longitudinally carinated, giving the insect a peculiar corrugated appearance. Whether this individual is the young of one of the described species, or new, I cannot say.

Family PYCNOGASTERIDÆ.

This is also an Old World group of the Tettigonoidea and is confined chiefly to the Mediterranean region. These insects are wingless, or almost so, being provided with these appendages only in the form of stridulating organs almost covered by the pronotum, and present in both sexes. According to Kirby's Catalogue of the Orthoptera there are eighty-eight recognized species, distributed among eight genera.

Genus STEROPLEURUS Bolivar.

Steropleurus BOLIVAR, Bol. An. Soc. Esp. Hist. Nat., VII, p. 449 (1878); IB., Ann. Sci. Nat. Porto, V., pp. 133, 139 (1898); KIRBY, Syn. Cat. Orth., II, p. 163 (1906).

52. *Steropleurus siculus* (Fieber) (?)

A female specimen of *Steropleurus*, as limited by Bolivar, on comparison with keys and descriptions, appears to be closely related to, if not identical with, *S. siculus* (Fieber).

The specimen was collected by Dr. W. J. Holland at Tangier, Morocco, in October, 1911. C. M. Acc. No. 4514.

Family CONOCEPHALIDÆ.

Genus PSEUDORHYNCHUS Serville.

Pseudorhynchus SERVILLE, Ins. Orth., p. 509 (1839); REDTENBACHER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, pp. 329, 364 (1891); KARNY, Abh. K. K. Zoöl.-Bot. Ges. Wien, IV, pt. 3, p. 17 (1907).

Pseudorhynchus is entirely confined to the eastern hemisphere, and contains about a dozen and a half recognized species.

53. *Pseudorhynchus lanceolatus* (Fabricius).

Locusta lanceolatus FABRICIUS, Syst. Ent., p. 284 (1775).

Conocephalus lanceolatus BURMEISTER, Handb. Ent., II, p. 704 (1838).

Pyrgocorypha hastata BOLIVAR, Journ. Sci. Lisboa, (2), I, p. 222 (1890).

Pseudorhynchus hastatus REDTENBACHER, l. c., p. 336 (1891); KARNY, l. c., p. 17 (1907).

Pseudorhynchus lanceolatus KIRBY, Syn. Cat. Orth., II, p. 238 (1906).

There are two males of this species. They are from Lolodorf, where they were taken by A. I. Good on October 1, 1913, and February 25, 1914, respectively.

Genus HOMOROCORYPHUS Karny.

Homorocoryphus KARNY, Abh. K. K. Zoöl.-Bot. Ges. Wien, IV, pt. 3, pp. 41-50 (1907). This is in part *Conocephalus* of authors.

There are many distinct species of this genus known to entomologists. They occur in both hemispheres, and range through the tropics as well as the adjacent parts of the temperate zones. Between forty and fifty forms have been referred to the genus.

54. *Homorocoryphus nitidulus* (Scopoli).

Gryllus nitidulus SCOPOLI, Del. Flor. Faun. Insubr., I, p. 62, pl. 24B (1786);
GRIFFINI, Boll. Mus. Zoöl. Anat. Comp. Torino, XI, no. 220, p. 1 (1896).

For the very extended synonymy of this species see Kirby, Syn. Cat. Orth., II, pp. 252-253. It was referred to *Homorocoryphus* by Karny, the author of the genus, *l. c.*, p. 44 (1907).

Six males, one female, and three nymphs are at hand from Batanga (F. H. Hope, Coll.) and two females from Lolodorf (A. I. Good, Coll.). Another female which varies somewhat from the others in length of wing and robustness of the hind tibiae, is doubtfully referred to this species. It also is from Lolodorf, where it was taken by A. I. Good.

Family XIPHIDIIDÆ.

Genus ORCHELIMUM Serville.

Orchelimum SERVILLE, Ins. Orth., p. 522 (1839); SCUDDER, Guide N. A. Orth., p. 55 (1897); MCNEILL, Can. Ent., XXXII, p. 77 (1900); KIRBY, Syn. Cat. Orth., II, p. 271 (1906); KARNY, Abh. K. K. Zoöl.-Bot. Ges. Wien, IV, (3), p. 81 (1901).

Xiphidium subg. *Orchelimum* REDTENBACHER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, p. 494 (1891), for further references see Kirby, *l. c.*

The members of the present genus, with the exception of a single species, belong to North America and adjacent islands.

55. *Orchelimum senegalense* Krauss.

Orchelimum senegalense KRAUSS, Sitz. Akad. Wien, Math.-Nat. Cl., LXXXVI (1), p. 60, pl. 1, fig. 12 (1877); KIRBY, *l. c.*, p. 274 (1906); KARNY, *l. c.*, p. 84 (1901).
Xiphidium senegalense REDTENBACHER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, pp. 495, 504 (1891); SJÖSTEDT, Bih. Svenska Akad., XXVII (4: 3), p. 140 (1902).

Four females, three males, and one nymph of this insect are among the material collected by F. H. Hope at Batanga. They were taken in March and April, 1914. C. M. Acc. No. 5293.

Genus XIPHIDIUM Serville. (Conocephalus)

Xiphidium SERVILLE, Ann. Sci. Nat., XXII, p. 159 (1831); *IB.*, Ins. Orth., p. 505 (1838); BLANCHARD, Hist. Nat. Ins., III, 25 (1840); REHN, (1902); KARNY, (1907), etc.

For an extended synonymy see Kirby, Syn. Cat. Orth., p. 274.

The genus *Xiphidium* contains many representatives, upwards of

eighty species now being recognized. These are found scattered in various regions of the Earth. They are, for the most part, frequenters of grass-lands, such as prairies, meadows, swampy tracts on the margins of streams, ponds, lakes, etc., as well as in grassy clearings. A few are restricted to certain types of localities and certain grasses, while others are widely scattered.

Several species are recognized among the material now receiving attention.

56. *Xiphidion neglectum* sp. nov.

A single male of a species, which does not run to any of the described forms given in either Redtenbacher's or Karny's synoptic keys, is at hand. If we accept the statement that the hind margins of the lateral lobes of the pronotum are rounded, it will not run; if we decide that the hind margins are straight or nearly so, we find the same trouble. It belongs to the series having the anterior tibiae five- to seven-spined below; the cerci are slender, acuminate, and do not have the apex depressed or flattened and are provided with a single inner tooth near the middle, the dorsum of abdomen is not definitely infuscated, the fastigium is rather wide at its apex with the lateral margins divergent, the hind femora are unarmed, the tegmina are as long as the wings and surpass the apex of the hind femora, the fastigium, occiput, and the disc of the pronotum are visibly longitudinally marked with ferruginous and the disc of the tegmina also shows signs of infuscation. Otherwise the entire insect is uniformly pale testaceous, it very evidently having been left in the wet cyanide tube for a day or two thus causing it to lose any possible characteristic colorations.

Length of body, ♂, 15 mm.; of tegmina, 16 mm.; of hind femora, 12 mm.

Habitat: Batanga (F. H. Hope, Collector). Taken in April, 1914. C. M. Acc. No. 5293.

57. *Xiphidion continuum* Walker.

Xiphidium continuum WALKER, Cat. Derm. Salt. Brit. Mus., II, p. 271 (1869).

Anisoptera continuum KIRBY, Syn. Cat. Orth., II, p. 279 (1906).

A pair, male and female, of a second species are determined as *X. continuum* Walker. They are from Batanga, and were collected by F. H. Hope in April. C. M. Acc. No. 5293.

58. *Xiphidion iris* Serville.

Xiphidion iris SERVILLE, Ins. Orth., p. 506 (1839); KARNY, Abh. K. K. Zoöl.-Bot. Ges. Wien, IV, pt. 3, p. 94 (1907). For further synonymy see Kirby, *l. c.*, p. 279. Batanga, one male and one female. F. H. Hope, collector.

59. *Xiphidion africanum* Redtenbacher.

Xiphidium africanum REDTENBACHER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, pp. 497, 516 (1891).
Xiphidion africanum KARNY, *l. c.*, p. 94 (1907).
Anisoptera africanum KIRBY, *l. c.*, p. 279.

A single female of this species, from Batanga, taken in March, 1914, by F. H. Hope.

60. *Xiphidion guineënsis* Redtenbacher.

Xiphidium guineënsis REDTENBACHER, *l. c.*, pp. 497, 518 (1891).
Xiphidion guineënsis KARNY, *l. c.*, p. 94 (1907).
Anisoptera guineënsis KIRBY, *l. c.*, p. 280 (1906).

There are three males and three females collected by F. H. Hope in April, 1914, at Batanga.

This and the preceding species are very similar, except as to length of wing.

61. *Xiphidion obtectum* Karny.

Xiphidion obtectum KARNY, *l. c.*, pp. 94, 96 (1907).

This species of *Xiphidion* is represented by twenty-one males and eight females, from Batanga, collected by F. H. Hope.

62. *Xiphidion conocephalus* Linnaeus.

Gryllus Tettigonia conocephalus LINNÆUS, Syst. Nat. (Ed. XII), I, (2), p. 696 (1767).
 For a synonymy of this species see Kirby, *l. c.*, p. 279.

Eleven representatives of a seventh species of *Xiphidion* coming from western Africa are referred to *athiopicum* Thunberg, and, if Kirby is correct in his surmise as to synonymy, they are the same as *conocephalus* Linnaeus. There are three males and eight females taken by F. H. Hope at Batanga.

Family PSEUDOPHYLLIDÆ.

Genus OPISTHODICRUS Karsch.

Opisthodictus KARSCH, Ent. Nachr., XVI, p. 272 (1890); *IB.*, Berlin. Ent. Zeitschr., XXXVI, pp. 76, 86 (1891); BRUNNER VON WATTENWYL, Mon. Pseudoph., pp. 9, 31 (1895); KIRBY, Syn. Cat. Orth., II, p. 292 (1906).

63. *Opisthodichrus cochlearistylus* Karsch.

Opisthodichrus cochlearistylus KARSCH, Berlin. Ent. Zeitschr., XXXVI, p. 87, pl. 2, fig. 4 (1891); BRUNNER, *l. c.*, p. 32, pl. 1, fig. 3 (1895).

A male from Lolodorf and a female from Batanga are referred to this species. The former was collected by A. I. Good and the latter by F. H. Hope. C. M. Acc. Nos. 5264 and 5293.

Genus LIOCENTRUM Karsch.

Liocentrum KARSCH, *l. c.*, p. 272 (1890).

This is an African genus based on a species found in Cameroon.

64. *Liocentrum aduncum* Karsch?

Liocentrum aduncum KARSCH, Berlin, Ent. Zeitschr., XXXVI, p. 88, pl. 2, fig. 3 (1891); BRUNNER, *l. c.*, p. 32 (1895).

A female Pseudophyllid from Lolodorf is referred to Karsch's *Liocentrum aduncum* with some misgivings. It apparently has been immersed in spirits, has lost its color, and its wings have also become somewhat distorted. It was taken February 19, 1914, by A. I. Good. C. M. Acc. No. 5264.

Genus CYMATOMERA Schaum.

Cymatomera SCHAUM, Ber. Akad. Berlin, 1853, p. 777; *IB.*, in Peter's Reise n. Mosamb., V, p. 122 (1862); STÅL, Recens. Orth., II, pp. 53, 69 (1874); KARSCH, Ent. Nachr., XVI, p. 274 (1890); *IB.*, Berlin. Ent. Zeitschr., XXXVI, pp. 77, 96 (1891); BRUNNER, Mon. Pseudoph., pp. 12, 82 (1895).

This is also an African genus, which contains several species. From the general griseous color of its representatives I should judge them to be dwellers on tree-trunks or on the ground among various kinds of dead and decaying vegetation, or perhaps on lichen-covered rocks. Only one species is at hand.

65. *Cymatomera argillata* Karsch.

Cymatomera argillata KARSCH, *l. c.*, pp. 97, 98, pl. 3, fig. 10 (1891); BRUNNER, *l. c.*, pp. 83, 85 (1895).

A single female from Batanga. It was collected in April by F. H. Hope. C. M. Acc. No. 5293.



Genus MORMOTUS Karsch.

Mormotus KARSCH, Ent. Nachr., XVI, pp. 269, 276 (1890); *IB.*, Berlin. Ent. Zeitschr., XXXVI, p. 109 (1891); BRUNNER, Mon. Pseudoph., pp. 17, 153 (1895).

Mormotus is still another Pseudophyllid genus, all the described species of which are confined to tropical Africa. Eight species are known.

66. *Mormotus montesi* Bolivar.

Platyphyllum montesi BOLIVAR, An. Soc. Espan., XV, p. 347 (1886).

Mormotus obtusatus BRUNNER, *l. c.*, pp. 154, 155 (1895).

Mormotus montesi KIRBY, Syn. Cat. Orth., II, p. 323 (1906).

A female specimen from Lolodorf, is placed here. It was collected by A. I. Good. C. M. Acc. No. 5264.

Genus HOPLIDOSTYLUS Karsch.

Hoplidostylus KARSCH, Berlin. Ent. Zeitschr., XXXVIII, pp. 136, 138 (1893); BRUNNER, Mon. Pseudoph., pp. 17, 157 (1895).

The present genus contains only a single species, so far as known.

67. *Hoplidostylus argillatus* Karsch.

Hoplidostylus argillatus KARSCH, *l. c.*, p. 138, fig. 20 (1893); BRUNNER, *l. c.*, p. 158 (1895).

The species is represented by a single somewhat mutilated female from Banza Manteka in the Belgian Congo. It was collected by A. L. Bain. C. M. Acc. No. 4601. A second specimen, also a female, with excessively long antennæ, from Lolodorf is also doubtfully placed in this species, although it does not quite agree with the diagnosis as given by Brunner v. Wattenwyl in his Monograph of the Pseudophyllidæ. The specimen was collected by A. I. Good. C. M. Acc. No. 5264.

Family MECOPODIDÆ.

The *Mecopodidæ* are one of the tropical families of long-horned grasshoppers, which are fairly well represented in Africa. The family contains some remarkably bizarre forms. Practically all of these insects are obscurely colored, and evidently spend the greater part of their lives on or near the ground among fallen leaves and other dead and decaying vegetation.

Genus *ACRIDOXENA* White.

Acridoxena WHITE, Proc. Roy. Phys. Soc. Edinb., III, p. 309 (1865); REDTENBACHER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLII, pp. 190, 208 (1892); KIRBY, Syn. Cat. Orth., II, p. 362 (1906). For synonymy see Kirby, *l. c.*

68. *Acridoxena hewaniana* Smith.

Acridoxena hewaniana SMITH, Proc. R. Phys. Soc. Edinb., III, p. 311 (1865); KIRBY, Trans. Ent. Soc. London, 1891, p. 410; REDTENBACHER, *l. c.*, p. 209 (1892).

Stalia fodiata SCUDDER, Proc. Bost. Soc. Nat. Hist., XVII, pp. 456, 457, figs. 3-5 (1875).

Eustalia foliata SCUDDER, *l. c.*, XX, p. 95 (1879); KARSCH, Ent. Nachr. XII, pp. 145-147, fig. (1886).

This bizarre insect is represented by a fine female specimen from Lolodorf collected by A. I. Good. C. M. Acc. No. 5264.

Genus *ELUMA* gen. nov.

This generic name is proposed for an insect from the Congo, which is related to the species of *Anadopoda* Karsch, but without the vitreous spots along the disc of the tegmina. By running it in Karsch's synoptic key of the Mecopodid genera it readily falls into the section 7.7. under 3.3. of I.I. Since its elytra are long and ample, by a modification or extension of the key we would have the following:

8.8 Elytra elongate, greatly surpassing the hind femora.

9. Pronotal carinae blunt, rounded, smooth. Venation of the elytra very regular, the transverse veins of the disc twenty-one or twenty-two in number *Eluma* gen. nov.

9.9 Pronotal carinae rather sharp and somewhat crenulate, or even toothed. Venation of the elytra less regular, the transverse veins of the disc eleven to fourteen in number *Anadopoda* Karsch.

69. *Eluma amplipennis* sp. nov.

Rather large, but somewhat graceful or slender, with long broad wings. Dark grayish brown, with scarcely any mottling or spotting with fuscous, except along the margins of the tegmina. The veins, cross-veins, and veinlets fuscous. Head a little narrower than the front end of the pronotum, smooth, provided with punctures in front and on the anterior part of the cheeks; the fastigium of the vertex broad, its apex widely rounded, much as in members of the next genus. Disc of the pronotum flat, comparatively smooth, or free from large

rugosities, evenly widening from front to base, twice furrowed by the two transverse sulci, which sever the lateral carinae, posterior margin broadly rounded, the disc of the hind lobe showing traces of several longitudinal rugae and blunt tubercles. Tegmina elongate, their apex greatly passing the apex of the slender hind femora, their length almost three and one-half times their greatest width. Legs elongate, rather slender, the hind femora at their base only gently robust, few-spined below, internally about six-spined, externally three- to four-spined. Ovipositor rather slender, evenly tapering, and gently falcate. Base of tegmina of female provided with a well defined stridulating area, that on the right elytron thin, pallid, membranous and free from veins; on the left heavy, dusky, and roughened.

Length of body, ♀, 45 mm.; of pronotum, 10 mm.; of tegmina, 60 mm.; width 17 mm.; length of anterior femora, 14 mm.; middle, 17 mm.; hind, 36.5 mm.

Habitat: The only specimen at hand, the type, which belongs to the Carnegie Museum, comes from Banza Manteka, in the Belgian Congo, where it was taken by A. L. Bain. C. M. Acc. No. 4601.

Genus ANÆDOPODA Karsch.

Anædopoda KARSCH, Berlin. Ent. Zeitschr., XXXVI, pp. 333, 346 (1891); REDTENBACHER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLII, pp. 190, 210 (1892).

The members of this strictly African genus are very similar in general appearance to those belonging to the typical genus *Mecopoda*, which has a distribution extending to India, China, Japan, the Indo-Malayan Archipelago, and many of the larger "South-Sea" islands. The main difference between the species of the two genera is in the rather slender basal portion of the hind femora of representatives of this genus, when compared with the very robust basal portion of these members in *Mecopoda*.

70. *Anædopoda erosa* Karsch.

Anædopoda KARSCH, l. c., XXXVI, pp. 334, 335, fig. 7 (1892); *IB.*, XXXVIII, pp. 76, 77 (fig. 3) (1892).

One male and two females of this species are among the material collected by A. I. Good at Lolodorf. C. M. Acc. No. 5264.

Genus EUTHYPODA Karsch.

Euthypoda KARSCH, Berlin. Ent. Zeitschr., XXX, pp. 108, 111 (1886).

Macrosirtus PICTET, Mém. Soc. Gênevê, XXX, (6), p. 13 (1888); REDTENBACHER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLII, pp. 191, 216 (1892).

The present genus is solely African in its distribution. Four species are known. They are characterized by having excessively heavy and long hind femora.

71. *Euthypoda kangaroo* (Pictet).

Macroscirtus kangaroo PICTET, *l. c.*, p. 14, pl. 2, figs. 38, 38a (1888); REDTENBACHER, *l. c.*, pp. 217, 218 (1892).

The only specimen of this species in the collection, a female, was taken by A. I. Good at Lolodorf in November, 1913. C. M. Acc. No. 5264.

Genus *CORYCUS* Saussure.

Corycus SAUSSURE, *An. Soc. Ent. France*, (4), i, p. 487 (1861); KRAUSS, *Zoöl. Jahrb., Syst.*, V, pp. 344, 349 (1890); KARSCH, *Berlin. Ent. Zeitschr.*, XXXVI, pp. 335, 346 (1891); REDTENBACHER, *Verh. K. K. Zoöl.-Bot. Ges. Wien*, XLII, pp. 191, 220 (1892).

Like the two preceding genera this is also a strictly African genus, with its center of distribution about the Gulf of Guinea. Nine species are recognized according to Kirby's Catalogue. They may be separated as follows:

SYNOPSIS OF THE SPECIES OF *CORYCUS*.

- A. Anterior tibiæ above plane, not sulcate; subbasally sometimes marked with black.
 - b. Pronotum with the posterior margin subangulate. Tegmina of male wider apically (32 mm.); the stridulating area rather simple, with few veins. *jourinei* Saussure.
 - bb. Pronotum with its posterior margin obtusangulate. Tegmina of male narrower apically (28 mm.); the stridulating area more complicated, provided with several heavy veins. *kraussi* Kirby.
- AA. Anterior tibiæ above sulcate.
 - b. Anterior tibiæ near their base never marked with a black patch. *intermedius* Redtenbacher.
 - bb. Anterior tibiæ immaculate near their base.
 - c. Anterior tibiæ above less profoundly sulcate.
 - d. Posterior margin of the tegmina oblique, angulate above between the internal and posterior margins.
 - e. Tegmina between the internal and posterior margins obtusely angulate. *abruptus* Krauss.
 - ee. Tegmina between the internal and posterior margins acutely angulate. *karschi* Krauss.
 - dd. Posterior margin of the tegmina straight, above between the internal and posterior margins irregularly emarginate. *premosus* Krauss.



cc. Anterior tibiæ above profoundly or deeply sulcate.

d. Island of St. Thomé, Gulf of Guinea.

greeffi Krauss, *paradoxus* Bolivar.

dd. Gaboon, French Congo. *siccifolium* Sjöstedt.

72. *Corycus kraussi* Kirby.

Corycus kraussi KIRBY, Syn. Cat. Orth., II, 367 (1906).

Corycus jourinei KRAUSS (*nec* SAUSSURE), Zoöl. Jahrb., Syst., V, pp. 352, pl. 30, figs. 1a, b (1890); REDTENBACHER, *l. c.*, p. 221 (1892).

This species is represented by a single fine male, from Batanga. It was collected in April, 1914, by F. H. Hope. C. M. Acc. No. 5264.

Family MECONEMIDÆ.

The family Meconemidæ is comparatively small. Its representatives are all confined to the Old World. Eight genera are included in the family, comprising twenty-three species.

Genus AMYTTA Karsch.

Amytta KARSCH, Wien. Ent. Zeit., VII, p. 160 (1888); *IB.*, Ent. Nachr., XVI, p. 264 (1890); KIRBY, Syn. Cat. Orth., II, p. 373 (1906).

Only three species of this genus are known. All are native to tropical Africa.

73. *Amytta occidentalis* Karsch.

Amytta occidentalis KARSCH, Ent. Nachr., XVI, 264 (1890); GRIFFINI, Ann. Mus. Genova, XLII, p. 367 (1906); KIRBY, *l. c.*, p. 373 (1906).

This delicate insect is represented by a single male which was taken by A. I. Good at Lolodorf, May 27, 1914. C. M. Acc. No. 5264.

Family PHANEROPTERIDÆ.

The family known among orthopterologists by the above name is very extensive indeed, and, as stated in a former paper by the present author, (See ANNALS, Vol. IX, p. 286) "is distributed throughout the warmer countries of the globe, where its representatives are among the commoner and more conspicuous orthopterous insects to be met with at almost every turn." While that applied to conditions in America, the same remark is equally true of Africa, and, for that matter, of any other country, including the larger islands of the Orient. Most of these insects are green or greenish in color, and live

among the rank vegetation common in humid localities. Even many of the more arid tracts also have their characteristic representatives of the family. Many of the species are attracted to bright lights after nightfall, hence are quite readily collected. Others may be taken by beating and sweeping the foliage of trees and the herbage growing at the borders of forests, groves, thickets, and the margins of lakes and streams. Still others live upon the trunks of trees, on ledges of rocks, and the ground, mimicking their surroundings in color. At least fifteen distinct species of this family are represented in the material now at hand, upon which I am reporting.

Genus ARANTIA Stål.

Arantia STÅL, Recens. Orth., II, pp. 10, 25 (1875); BRUNNER VON WATTENWYL, Mon. Phan., pp. 17, 136 (1878); *IB.*, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, pp. 8, 63 (1891); KARSCH, Berlin. Ent. Zeitschr., XXXIII, pp. 422, 432 (1888).

The genus *Arantia* is composed of twenty or more species of rather large and showy insects, all of which are confined to Africa. While bearing a general resemblance to certain of the larger and more robust American forms, these insects possess certain distinctive characters of their own, which readily separate the two groups. Only three of the species are contained among the material at hand.

74. *Arantia rectifolia* Brunner?

Arantia rectifolia BRUNNER, *l. c.*, p. 137 (1878); KARSCH, *l. c.*, p. 433 (1888).

Two of the "katyids" among the material studied are referred to Brunner's *A. rectifolia* with some hesitation. They are both females. One of them come from Lolodorf, where it was taken by A. I. Good. C. M. Acc. No. 5264. The other is from the Belgian Congo, collected by Antisdel. C. M. Acc. No. 2315.

75. *Arantia orthocnemis* Karsch.

Arantia orthocnemis KARSCH, Ent. Nachr., XVI, p. 357 (1890).

A single male from Lolodorf is assigned to *A. orthocnemis* Karsch. It was taken by A. I. Good in August, 1913.

76. *Arantia mammissignum* Karsch.

Arantia mammissignum KARSCH, Stettin. Ent. Zeit., LVII, p. 332 (1896).

There is a single female specimen of this large and attractive species at hand. It also was captured by A. I. Good at Lolodorf. C. M. Acc. No. 5264.

Genus PHLAUROCENTRUM Karsch.

Phlaurocentrum KARSCH, Berlin. Ent. Zeitschr., XXXII, p. 445 (1888); BRUNNER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, pp. 11, 106 (1891).

The representatives of this African genus somewhat resemble those of the American genus *Scudderia*, although they are not closely related. Only three species have been recognized, all of them belonging to the general region from which the present collection comes.

77. *Phlaurocentrum latevittatum* Karsch.

Phlaurocentrum latevittatum KARSCH, l. c., p. 446 (1888); IB., XXXVI, pp. 321, 322, fig. 1a (1891); BRUNNER, l. c., p. 106 (1891).

The single representative of the species *P. latevittatum*, is a male from Lolodorf, where it was taken by A. I. Good.

Genus ZEUNERIA Karsch.

Zeuneria KARSCH, Berlin. Ent. Zeitschr., XXXII, p. 443 (1888); BRUNNER, l. c., pp. 13, 94 (1891).

This genus which is monotypic is African.

78. *Zeuneria melanopeza* Karsch.

Zeuneria KARSCH, l. c., p. 443 (1888).

One male from Lolodorf, A. I. Good, collector. C. M. Acc. No. 5364.

Genus PHANEROPTERA Serville.

Phaneroptera SERVILLE, Ann. Sci. Nat., XXII, p. 158 (1831). For the synonymy of this genus see Kirby, Syn. Cat. Orth., II, p. 434 (1906).

This, the typical genus of the family, is composed of approximately two dozen recognized species, which in their distribution are confined to the Old World. A single species, *nana*, has been recorded from South America, where it undoubtedly was accidentally introduced by means of commerce. All of the species are small, and quite similar in their general appearance. Four of them are contained in the material upon which I am reporting.

79. *Phaneroptera nana* Fieber.

Phaneroptera nana FIEBER, Lotus, III, p. 173 (1853). For further synonymy see Kirby, l. c., p. 435 (1906).

This rather widely distributed and common species is represented

by a single female from Lolodorf, A. I. Good, Collector, and by eight males and fourteen females from Batanga, F. H. Hope, Collector.

80. *Phaneroptera reticulata* Brunner.

Phaneroptera reticulata BRUNNER, Mon. Phan., pp. 210, 213 (1878).

Although *reticulata* was described from South Africa, there are four individuals one male and three females, at hand from Batanga, thus considerably extending the range of the species. The material was taken by F. H. Hope. C. M. Acc. No. 5293.

81. *Phaneroptera* sp.?

There are three females of a third species of the genus before me. They are quite noticeably larger than either of the preceding, but, being somewhat discolored, are not readily determinable. This is particularly true, since the published synoptical keys are based largely on the males. One of the specimens comes from Lolodorf, A. I. Good, Collector, and the others from Batanga, F. H. Hope, Collector.

82. *Phaneroptera* sp.?

Still a fourth species of the genus *Phaneroptera* is represented by a single female specimen. It, too, is considerably discolored and difficult to determine for the same reason stated in connection with the preceding. This latter form is rather larger, and has broader tegmina and wings, than the three preceding and as yet is undetermined. Possibly it may be new. It comes from Batanga, where it was collected in April, 1914, by F. H. Hope. C. M. Acc. No. 5263.

Genus GELATOPEA Brunner.

Gelatopæa BRUNNER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, pp. 15, 111 (1891);
KARSCH, Stettin. Ent. Zeit., LVII, 343 (1896).

The genus *Gelatopæa* is African, and thus far contains but a single representative, which in general appearance seems very much like the Central and South American representatives of *Aphidnia*. These latter live largely on trunks of trees, stony ledges, and other places where lichens abound, and on account of their slow movements and variegated colors are well protected from their enemies.

83. *Gelatopœa bicolor* Brunner.

Gelatopœa bicolor BRUNNER, *l. c.*, p. 12, pl. 2, fig. 19 (1891); KIRBY, Syn. Cat. Orth., II, p. 439 (1906).

Only a single specimen of each of the two sexes of this interesting insect are at hand. They were collected by A. I. Good at Lolodorf. The male was taken in May, 1914, and the female in October, 1913. C. M. Acc. No. 5264.

Genus EURYCORYPHA Stål.

Eurycorypha STÅL, Öfv. Vet.-Akad. Förh., XXX (4), p. 40 (1873); *IB.*, Recens. Orth., II, p. 18 (1874); BRUNNER, Mon. Phan., pp. 27, 272 (1878); *IB.*, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, pp. 19, 136 (1891); KARSCH, Berlin, Ent. Zeitschr., XXXVI, p. 425 (1888).

Still another common African genus of the family Phaneropteridæ is known as *Eurycorypha*. These insects are mostly above medium in size and recall such American genera as *Phylloptera* and *Microcentrum*. Twenty species are listed by Kirby in his Synonymic Catalogue of the Orthoptera. There seems to be an additional one at hand, at least it does not agree with any hitherto described species.

84. *Eurycorypha æquatorialis* Krauss?

Eurycoryphus æquatorialis KRAUSS, Zoöl. Jahrb., Syst., V, p. 663, pl. 45, fig. 9 (1890).

A single female of what appears to be this species is at hand. It comes from Lolodorf, where it was taken in November, 1913, by A. I. Good. C. M. Acc. No. 5264.

85. *Eurycorypha cereris* (Stål)?

Phylloptera cereris STÅL, Öfv. Vet.-Akad. Förh., XIII, p. 170 (1856).
Eurycorypha cereris STÅL, *l. c.*, XXX (4), p. 4 (1873); *IB.*, Recens. Orth., II, p. 39 (1874); BRUNNER, Mon. Phan., pp. 272, 273 (1878); *IB.*, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, p. 136 (1891).

Another species, also represented by a single female, belonging to the genus *Eurycorypha* is referred with some doubt to *E. cereris* of Stål. It bears a resemblance to both *brevicollis* Stål, and *securifera* Brunner. The specimen was taken by Good at Lolodorf, Dec. 29, 1913. C. M. Acc. No. 5264.

The characters employed by Brunner in his Synoptical key are based principally on the males, hence the doubtful reference of the specimens now at hand, which all belong to the other sex.

86. *Eurycorypha zebrata* sp. nov.

Above the average in size, pale green with the tegmina transversely banded and streaked with brown. Tegmina broad, widest at middle, subtriangular in form.

Head rather large, as broad as the front end of the pronotum; the vertex broad, about as wide as four times the diameter of the basal antennal joint, separated from the front by a delicate straight transverse sulcus, extending across from the middle of the antennal cavities. Antennæ very slender, filiform, with their basal joint touching the inner edge of the lower third of the small elongate eyes. Pronotum rather large, about one and one-half times as long as wide, the disc flat, a very little divergent caudad, crossed by a single transverse sulcus at about one-third its length from the apex, middle longitudinally narrowly sulcate, instead of carinate; lateral carinæ straight, blunt; lateral lobes perpendicular, fully as high as long; anterior margin of the disc widely subangulately emarginate, posterior margin evenly and broadly rounded; upper posterior margin of the lateral lobes separated from hind lobe of the disc by a deep acute emargination over the insertion of the tegmina. Legs comparatively short and slender, the hind femora somewhat shorter than the greatest width of the tegmina, the carinæ of lower edge armed with several small spines on their apical two-fifths. Ovipositor rather large and broad, the margins smooth; last ventral segment or subanal plate triangular, acuminate, longitudinally bicarinate at middle. Lateral angles of disc of the pronotum and base of the tegmina fusco-brunneous.

Length of body, ♀, 30 mm.; of pronotum, 7.5 mm.; of tegmina, 43 mm.; greatest width of latter, 18 mm.; length of hind femora, 17 mm.

Habitat: The type, and only specimen at hand, comes from Lolodorf, where it was taken October 29, 1913, by A. I. Good. C. M. Acc. No. 5264.

Genus VOSSIA Brunner.

Vossia BRUNNER, Verh. K. K. Zoöl.-Bot. Ges. Wien, XLI, pp. 19, 139 (1891).

A West African genus with two species. These insects are noted for the very great depth of the lateral lobes of the pronotum, the posterior angles of which are subangulate.

87. *Vossia obesa* Brunner.

Vossia obesa BRUNNER, *l. c.*, p. 140, pl. 2, fig. 27 (1891); KIRBY, *Syn. Cat. Orth.*, II, p. 464 (1906).

The collection made by A. I. Good at Lolodorf contains a single male, which is placed here. It was taken July 25, 1913. C. M. Acc. No. 5264.

Genus CORYCOMIMA Karsch.

Corycomima KARSCH, *Stett. Ent. Zeitschr.*, LVII, p. 343 (1896).

This is still another genus, which is peculiar to the African tropics. It is also monotypic, so far as at present known.

88. *Corycomima flavescens* (Walker)?

Orophus flavescens WALKER, *Cat. Derm. Salt. Brit. Mus.*, II, p. 386 (1869).

Plangia camerata KARSCH, *Berlin. Ent. Zeitschr.*, XXXII, p. 457 (1888); BRUNNER, *Verh. K. K. Zoöl.-Bot. Ges. Wien*, XLI, pp. 137, 138 (1891).

Corycomima camerata KARSCH, *Stett. Ent. Zeitschr.*, LVII, 344 (1896).

The only representative of the species and genus at hand comes from Lolodorf. It was collected by A. I. Good, October 1, 1913. C. M. Acc. No. 5264.

Suborder GRYLLOTALPOIDEA.

Among the saltatorial orthoptera none are more interesting than the insects known as "mole crickets." These, on account of their structure and burrowing habits, differ quite remarkably from their allies, the true crickets. Mole-crickets on account of their aquatic, or subaquatic, habits are confined to humid regions, where they may be obtained by digging for them at the margins of streams and by beating or sweeping the sandy beaches and rank vegetation growing in such localities.

These insects have usually been included with the crickets, but the present writer prefers to set them aside as a distinct suborder with affinities to both the locusts and the crickets. There are much fewer forms in this suborder than are found in other groups of orthopterous insects. This is probably due to their somewhat restricted distribution, due to their burrowing and moisture-loving, or subaquatic, habits.

Family GRYLLOTALPIDÆ.

Genus GRYLLOTALPA Latreille.

Grylotalpa LATREILLE, Hist. Nat. Crust. Ins., III, p. 275 (1802). For rather full synonymy see Kirby, Syn. Cat. Orth., II, p. 4 (1906).

89. *Grylotalpa africana* (Beauvois).

Grylotalpa africana BEAUVOIS, Ins. Afr. Amer., p. 229, pl. 2c, fig. 6 (1805), and numerous other authors (see Kirby, *l. c.*, p. 6).

There are two specimens of this species at hand, which were taken at Lolodorf, by A. I. Good, and one from Batanga, collected by F. H. Hope.

Family TRIDACTYLIDÆ.

Genus TRIDACTYLUS Olivier.

Tridactylus OLIVIER, Enc. Meth., Ins., IV, p. 26 (1789); for further synonymy see Kirby, *l. c.*, p. 7.

90. *Tridactylus digitatus* (Coquebert).

Acheta digitata COQUEBERT, Ill. Icon. Ins., III, p. 91, pl. 21, fig. 3 (1804).

Tridactylus digitatus SAUSSURE, Mém. Soc. Genève, XXV, p. 52 (1877). Additional synonymy is given by Kirby, *l. c.*, p. 8.

The single specimen of this species at hand was taken by A. I. Good at Lolodorf, on November 11, 1913. C. M. Acc. No. 5264.

Suborder ACHETOIDEA.

The crickets, although not as numerous as either the short-horned grasshoppers or locusts, or the long-horned grasshoppers, are, nevertheless, quite abundant in both genera and species. Like both of those suborders of the saltatorial orthoptera just mentioned, the present group is most numerously represented in subtropical and tropical countries. This statement is especially true of the more humid sections of those countries where the great forests and jungles of the world are to be found. In and about these they abound in great variety as to size, habits, etc. Thus far the group has been less collected and even less studied than other orthopterous insects.

Generally speaking, the crickets are less attractive than are the representatives of either of the "grasshopper" groups, because they are as a rule either dull in color, or do not possess striking structural

features. They are also mostly nocturnal in their movements, and many of them invariably lie hidden away during daytime among dead leaves and other rubbish, which litters the floor of forests. Some burrow into the earth, while still others hide beneath stones, fallen trees, in crevices, and under loose bark, or in any other nook or cranny, which offers concealment and protection from enemies and the light of day. Many of the forms are likewise rather small, very active, and live among the dense foliage of shrubs, bushes, vines, and trees, as well as in the grasses and other herbage of prairies, meadows, and swamps. A few burrow in the mud and damp sand of beaches, and at the margins of streams, while a few are strictly aquatic. Some species even live in and about the nests of ants, where they are both tolerated and protected.

The crickets, therefore, might be considered as being the most highly developed of the saltatorial orthoptera, *i.e.*, the farthest removed from primitive types.

The present collections do not happen to contain many representatives of the group, although the region under consideration no doubt is the habitat of a considerable number of both genera and species.

Family NEMOBIIDÆ.

Genus NEMOBIUS Serville.

Nemobius SERVILLE, Ins. Orth., p. 345 (1839) and numerous authors since. For references see Kirby, Syn. Cat. Orth., II, pp. 13, 14.

91. *Nemobius* sp.?

There is but a single specimen of the Nemobiid group at hand. This insect is referred to the genus *Nemobius* without trying to determine the identity of the species. It also belongs with the collections made by F. H. Hope at Batanga, and was taken in February, 1914. In size this specimen is among the very smallest of the species of the genus, likewise very slender, with caudate wings.

Family BRACHYTRYPIDÆ.

Genus BRACHYTRYPES (Serville).

Brachytrypes SERVILLE, Ins. Orth., p. 323 (1839); BOLIVAR, Ortopt. Españ., p. 276 (1876); *IB.*, An. Soc. Españ. Hist. Nat., VIII, p. 72 (1898).

Brachytrypes AGASSIZ, Nom. Zoöl. Ind. Univ., p. 52 (1846); FISCHER, Orth. Eur.,

p. 186 (1853); BRUNNER, Prodr. Eur. Orth., p. 438 (1882); FIEBER, Syn. Eur. Orth., p. 64 (1854); IB., Lotus, V, p. 66 (1855).
Brachytrypus SAUSSURE, Mém. Soc. Génève, XXV, p. 115 (1877).

92. *Brachytrypes caviceps* Karsch.

Brachytrypes caviceps KARSCH, Berlin. Ent. Zeitschr., XXVIII, p. 148 (1893).

Two females and two nymphs of this genus are determined as belonging to *B. caviceps* Karsch. They come from Batanga, where they were taken by F. H. Hope, in March and April, 1914.

These females agree with the description of the male in their coloration and have the tegmina just reaching to the tip of the abdomen. The ovipositor is moderately stout, with acuminate tip, and only about two millimeters long.

Genus GYMNOGRYLLUS Saussure.

Gymnogryllus SAUSSURE, Mém. Soc. Génève, XXV, p. 123 (1877); KIRBY, Syn. Cat. Orth., II, p. 23 (1906).

93. *Gymnogryllus miurus* Saussure.

Brachytrypus miurus SAUSSURE, l. c., p. 131 (1877).

Brachytrypus miurus KIRBY, l. c., p. 23 (1906).

There are three males, three females, and one nymph before me. They were collected by F. H. Hope at Batanga. C. M. Acc. No. 5293.

Family ACHETIDÆ.

Genus GRYLLUS Linnæus.

Gryllus LINNÆUS, Syst. Nat. (Ed. X), p. 425 (1758), and practically every entomologist since. For the main references see Kirby, Syn. Cat. Orth., II, p. 27.

94. *Gryllus conspersus* Schaum?

Gryllus conspersus SCHAUM, Bericht. Akad. Berl., 1853, p. 776; IB., Peters' Reise n. Mossamb., V, p. 117 (1862); SAUSSURE, Mém. Soc. Génève, XXV, p. 183 (1877).

The *G. conspersus* of Schaum appears to be represented by a single male and two females, which were taken by F. H. Hope in March and April, 1914, at Batanga.

95-99. *Gryllus* spp.?

There are also representatives of what appear to be at least half a dozen other species of the genus *Gryllus*. They were collected by the same party at Batanga.

The genus is difficult to work, and requires good and ample material to produce accurate results. I am accordingly postponing final determination for a later date.

Family PLATYBLEMMIDÆ.

Genus ALLUAUDIELLA Bolivar.

Alluaudiella BOLIVAR, Bull. Soc. Ent. France, LXII, p. ccex (1893); KIRBY, Syn. Cat. Orth., II, p. 47 (1906).

Alluandia BOLIVAR (*nec* Lameere), Ann. Soc. Ent. France, LXII, p. 181 (1893).

100. *Alluaudiella* ? *flavopicta* Bolivar?

Alluandia flavopicta BOLIVAR, *l. c.*, p. 183 (1893).

Alluaudiella flavopicta KIRBY, *l. c.*, p. 47 (1906).

I find two males of a species of cricket before me, which belong in the Platylemmid series, and possibly, but not certainly, to the genus *Alluaudiella* and the species *flavopicta* of Bolivar, but the descriptions of both the genus and species do not fit the material at hand. In the first place, these insects do not have the "body greatly flattened" nor especially smooth or polished, the head is not noticeably transverse, nor is the face or front almost horizontally sloped to the rear. In the second place the coloration is somewhat different from that attributed to *flavopicta*.

The main characteristic, however, of these specimens, which inclines me to consider them different, is the large flattened basal antennal joint or segment, the outer apex of which is produced into a long, somewhat flattened, gently curved outwardly directed tooth, or horn, which is a little longer than the rest of the joint. These specimens come from Batanga, where they were collected in February and April, 1914, by F. H. Hope. C. M. Acc. No. 5293.

In a synoptical key prepared by Saussure (Rev. Suisse de Zoöl., V, p. 794, 1898), these specimens run to the genus *Scapsipedus*, as they also do in a key prepared by Karsch, and contained in a paper on saltatorial orthoptera coming from Togoland and Adeli, West Africa (Berlin. Ent. Zeitschr., XXXVIII, p. 154, 1893). The described African species of this last-named genus are quite distinct from our specimens.

Family GECANTHIDÆ.

Genus HOMÆAGRYLLUS Guérin.

Homæogryllus GUÉRIN, LeFebvre, Voy. Abyssinie, VI, p. 335 (1847); SAUSSURE, Mém. Soc. Genève, XXV, p. 421 (1878).

101. *Homœogryllus reticulatus* (Fabricius).

Acheta reticulata FABRICIUS, Spec. Ins., I, p. 354 (1781).

Homœogryllus reticulatus SAUSSURE, l. c., p. 425, pl. 16 (XXXIX), fig. 2, pl. 19 (LXXVII), fig. 2 (1878). For additional synonymy see Kirby, Syn. Cat. Orth., II, p. 66 (1906).

F. H. Hope took two males of a representative of this genus at Batanga, which I do not hesitate to refer to *H. reticulatus* (Fabricius). A single female, however, coming from the same locality is placed here with some doubt, since it has somewhat larger dimensions than those given for this sex of *H. reticulatus*. All three of these specimens were collected in March and April.

Family TRIGONIDIIDÆ.

Genus CYRTOXIPHA Bruner.

Cyrtoxipha BRUNER, Mitth. Schweiz. Ent. Ges., IV, p. 168 (1873); SAUSSURE,

Miss. Sci. au Mex., Orth., p. 373 (1874); KIRBY, Syn. Cat. Orth., II, p. 80 (1906).

Cyrtoxiphus SAUSSURE, Mém. Soc. Gèneve, XXV, p. 476 (1878); BRUNER, Ann. Mus. Genova, XXXIII, p. 210 (1893).

102. *Cyrtoxipha ciliata* (Afzelius & Brannius).

Acheta ciliata AFZELIUS & BRANNIUS, Achet. Guin., p. 27, fig. 8 (1804).

Cyrtoxiphus ciliatus SAUSSURE, l. c., p. 490 (1878).

Cyrtoxipha ciliata KIRBY, l. c., p. 80.

A. I. Good took a single female of what appears to be this species at Lolodorf, on October 29, 1913, C. M. Acc. No. 5264. This specimen is mutilated, and besides much covered by mould, so that it is somewhat difficult to examine critically.

103. *Cyrtoxipha furva* Karsch.

Cyrtoxiphus furvus KARSCH, Berlin. Ent. Zeitschr., XXXVIII, p. 162 (1893).

Cyrtoxipha furva KIRBY, l. c., p. 81 (1906).

There is also a single specimen at hand of Karsch's *C. furvus*. It comes from Batanga, where it was collected in March, 1914, by F. H. Hope. C. M. Acc. No. 5293.

Family ENEOPTERIDÆ.

Genus EUSCIRTUS Guérin.

Euscirtus GUÉRIN, Icon. Reg. Anim., Ins., p. 334 (1844); KIRBY, Syn. Cat. Orth., II, p. 101 (1906).

Euscirtus SAUSSURE, Miss. Sci. au Mex., Orth., p. 500 (1874); IB., Mém. Soc. Gèneve, XXV, p. 622 (1878).

104. **Euscirtus bivittatus** Guérin.

Euscirtus bivittatus GUÉRIN, *l. c.*, p. 334 (1844).

Euscirtus bivittatus SAUSSURE, Mém. Soc. Genève, XXV, p. 624, pl. 19 (LXIX),
figs. 1, 1a, 1d, 1h, 1b (1878). For additional synonymy see Kirby, *l. c.*, p. 101.

One male and two females of this insect are at hand. They come from Batanga, where they were taken by F. H. Hope. C. M. Acc. No. 5293.

105. **Euscyrthus planiceps** Karsch.

Euscirtus planiceps KARSCH, Berlin. Ent. Zeitschr., XXXVIII, p. 166 (1893).

Euscyrthus planiceps KIRBY, *l. c.*, p. 101 (1906).

This species is represented by a mutilated female taken by F. H. Hope at the same locality as the preceding.